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BECAUSE it is built to specifications which guarantee an accuracy of 98% at 1/4 g.p.m. and 90% at 1/12 g.p.m., the Pittsburgh IMO Water Meter accurately measures those flows that either escape measurement entirely, or are only partially recorded by conventional meters. And what is even more important, this remarkable accuracy is sustained. Numerous tests show that even after several million gallons have been measured, Pittsburgh IMO Meters measure slightly better on the low flows than when first put into service, and that their accuracy does not change at rates of flow above 1 g.p.m.

Not only do Pittsburgh IMO Meters increase revenue by accurate measurement, but their maintenance costs are unusually low. The unique design of the measuring chamber and its semi-floating rotors increases the life of the working parts as compared with conventional meters and insures longer, trouble-free service.

The smoothly turning rotors, precision cut to mesh perfectly, revolve with a semi-floating action as the water flows through the measuring chamber in a straight line. For this reason the Pittsburgh IMO Meter can never become noisy; there can be no "clicking" noise to annoy your consumers. Write for the complete story in Bulletin W-529.

PITTSBURGH EQUITABLE METER COMPANY
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Remember—PITTSBURGH IMO METERS WEAR IN WHERE OTHERS WEAR OUT

The City, the Citizen, and the Census

How Communities Can Secure Maximum Benefits from the 1940 Census

A statement prepared for THE AMERICAN CITY *by Dr. Vergil D. Reed, Assistant Director, Bureau of the Census, setting forth the comprehensive, detailed facts which will be gathered by the 1940 Census regarding present and possible living conditions in the cities of the United States, for the guidance of intelligent activity by local officials and citizens' groups in meeting every point of community development:*

OUT of the welter of perplexing problems that have beset every city and town during the past ten years, there has developed the need for a steadily broadening knowledge about our people, our living conditions, our business activities and our public institutions. Recognizing this need, the United States Bureau of the Census is endeavoring in 1940 to canvass more fields of American social and economic life than it ever has covered during its 150 years of activity. On next year's calendar are Censuses of Population, Housing, Agriculture, Unemployment, Occupations, Business, Manufactures, Mines and Quarries, Irrigation and Drainage.

A greater variety of useful facts about the people of each city and their living conditions will be gathered than ever before. To help solve the great riddle of relief, the 1940 agenda call for official figures on unemployment, occupations, last year's wage and salary income, and the amount of schooling possessed by every person. To trace migrations to or from each city, the Census Bureau will ask where every person lived five years ago, as well as his location in 1940.

Aids to Housing and City Planning

The Census of Housing will make available, for the first time on a country-wide basis, a full current picture of the homes of our citizens, what they cost, their age, their rental value, the existing obligations against them and what services or conveniences they have, even to radio sets. Fire prevention and police work can be based on this information, which will also give many broad hints to health officers, school officials and park and recreation departments.

By coupling these data with shifts in commercial activity indicated by the Censuses of Business and Manufactures, municipal engineers can chart future needs in street construction and extension of water, sewer and other utility lines.

Such facts, students of municipal problems will recognize, are fundamentally important in zoning plans, in testing the validity of real estate subdivisions, or in considering desirability of extending corporate limits to include certain suburban developments.

The Census of Agriculture will give many new slants on the so-called "part-time farmer" who gains most of his livelihood in the city but lives in its hinterlands, and on the full-time farmer who does his shopping in the city. Census statistics will show which types of business and industry are too numerous in a community and which are too few. With these guideposts, the civic promoter can more intelligently decide which new industries to seek, on the basis of occupational needs and market realities. His task as salesman for his city will be facilitated by comparative Census figures on purchasing power, payrolls, retail volume, building activity and per capita sales of his and other cities. For attracting conventions to a city, authentic Census data on hotels, restaurants and places of amusement make for convincing arguments.

Census tracts now available for 35 major cities furnish more detailed and specific guidance on virtually every point mentioned heretofore. In fact, the police chief of one city uses these maps constantly in determining the size, type and linguistic requirements of each police contingent he dispatches to quell any sort of flagrant disorder.

In addition to these intra-city tracts, the Census Bureau goes beyond the corporate limits of many cities to study and analyze their metropolitan districts. In 1930 these analyses were made for 96 cities. In 1940 this will be done for 140 cities, and more complete data will be provided on each than ever before.

This type of study is designed to meet changes in living habits brought about by improvements in transportation—by the tendency toward suburban living, and the growing habit of people in small towns to do part of their trading in nearby large cities. These changes influence the size of the city's market, which it must be able to measure if it is to plan accurately.

Organization of Citizens' Committees Urged

Since municipalities have such a vital stake in the collection of accurate statistics on all these subjects, the Census Bureau is inviting every organized community in the country to set up a volunteer citizens' committee which will campaign for full local cooperation in the 1940 Census.

The Census Bureau will supply any community requesting it with a detailed plan for such a campaign, and all the essential materials for it—speeches, interviews, sample schedules, radio scripts and posters.

In the larger cities, the plan calls for chambers of commerce to take the lead, with the mayors closely associated, while in the smaller cities and towns the mayors are being asked to assume the entire responsibility. Under their leadership, local committees are being set up, to include representatives of all the essential elements of a community—leaders in business, the press, industry, education, health, labor, religion, men's and women's clubs, social work and agriculture.

The Census Bureau will supplement and support the local work with special articles in national magazines, radio and motion picture programs, news stories and speeches. In the final analysis, however, the campaign will stand or fall on what the local committees do. The state leagues of municipalities can also be of almost limitless help in this connection. Their cooperation already has been assured.

If municipal officials and civic bodies cooperate in this way with the Bureau in its work of taking the 1940 Census, they will be amply repaid by the comprehensive character of the Census results, and the promptness with which they are made public for future use.

When Preparing Your Municipality's Annual Report

You will find some helpful suggestions in the article entitled "Talking It Over with the Taxpayer," pages 35-37, 71 of this issue.

A Merry Christmas to All

Your friends and neighbors in the telephone company send you best wishes for a Merry Christmas.

Through the holidays, as always, we'll be on hand—doing our best to keep the Christmas spirit in telephone service.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

STOP

TRAFFIC SIGNS will fail in their fundamental purpose unless they are kept fitted to average driving speeds and discoveries in driver psychology. Small type, even though it can be seen, tends to go unread by many, whereas large, clear type is almost required reading. Lettering which is well proportioned and spaced is normally readable at 50 feet for each inch in height. Hence there is a strong trend to larger-sized signs with larger lettering. Signal Service Corporation recommends 18-inch letters for reading at 900 ft., or 10 seconds away at 60 mph. These larger signs are indicated not only for standard warnings along highways, but also for directional signs on highways and through the mazes of a city. Indeed, the comparatively small-sized route numbers, easily noted on the highway, need to be considerably enlarged at main intersections in the city.

Several tests conducted by the Michigan Highway Survey determined that replacing plain weatherbeaten 24-inch STOP signs with new 24-inch reflectorized signs had no effect on the proportion of violations—which continued to be 8 per cent by day and 17 per cent at night. When 36-inch reflectorized signs were installed, however, violations dropped 50 per cent by day and 75 per cent at night. A month later, daily violations had dropped another 20 per cent, and night violations another 2 per cent.

Signal Service Corporation points out the interesting fact that if it becomes generally recognized, as seems likely, that 18-inch or larger copy should be employed, then standardization should be in terms of copy size or legibility rather than in the dimensions of the sign. This is a reminder of the impossibility of standardizing anything except logic in an evolving technique such as traffic. One standard to be rigidly adhered to in the case of signs is that they be easily readable by the public for which they are constructed and located. Light-colored copy stroke and dark background panels are recommended, such as white S T O P on a black panel. The value of using a uniform copy size even for messages of unequal importance is in being able to read all large messages at the same distance and thus learning to gage that distance.

One large "loud" sign property reflectorized is less expensive and far more peremptory than a succession of small "whispering" signs.

NEW STOP SIGNS AT NIGHT ON 11-MILE HENRY HUDSON PARKWAY ALONG HUDSON RIVER IN NEW YORK CITY

Made of Mir-O-Ray (Arcturus Radio Tube Co. of Newark, N. J., product) which comes in sheets up to 18 x 36 inches or in strips, letters and numbers. The sign is well made by the Allen-Morrison Sign Co. of Lynchburg, Va., of 16-gage rust-resisting steel and dull-black high-baked Dulux du Pont enamel. Stop signs of similar construction but 35 and 50 feet long are installed on the Triborough and Whitestone toll bridges in New York City

TWO OF 25 LARGE SIGNS BEARING 50 MESSAGES ABOUT PEDESTRIAN SAFETY IN CANTON, OHIO

The signs are made of ¾-inch plywood 3 x 4 feet, suspended from a bracket designed by the Union Metal Mfg. Co. Their cost is negligible, but their value cannot be measured in terms of dollars and cents, for they have made a hit with the public—C. L. DEERWESTER, Commissioner of Traffic, Canton

Who's Who in Traffic?

ALTHOUGH THE MOTORIST and the pedestrian at different times are often one and the same man, each is likely to have very definite opinions on how the other ought to behave. The motorist curses the fluttering pedestrians at an intersection, while the pedestrian is enraged by the motorist's apparent arrogant belief that his 2-ton car adds to his own importance.

At the recent Automobile Show in New York, visitors voted 15 to 1 that the pedestrian should obey traffic signals. Round Two occurred in a Brooklyn, N. Y. court, where the magistrate decided that a pedestrian caught in midstream when the traffic lights change has a right to complete the crossing.

The motorist and the pedestrian tend to have one common quality at least: both are in a hurry: and fixed traffic lights seldom hit either nail on the head—the red light is always too long!

Police Commissioner Lewis J. Valentine voices a tolerant and commonsense viewpoint when, in pointing to the more than 10,000 signalized intersections of New York City, he says: "The traffic signals are put there for the safety of the pedestrian. Obviously, he must do his own thinking and exercise reasonable caution."

Complete Modernization with ELEVATED STORAGE

AN extensive modernization program has been carried on for the past several years by the Board of Water Commissioners of Newburyport, Mass., a city of 15,000 population. Improvements included the construction of a new slow-sand filtration plant, modernization of pumping equipment, and the thorough cleaning of a reservoir.

The City's water system, however, was deficient in the amount of storage of filtered water under proper pressure. The existing standpipe, built 40 years ago, has a capacity of 600,000 gals. It is at sufficient elevation to give static pressures in the system of 35 to 60 lbs. per sq. in. which, in general, is about 15 lbs. lower than desired.

After considerable study, it was decided to increase the storage capacity by the installation of an elevated tank which would not only give the City sufficient pressure but would also permit the extensions of the water mains to Plum Island, a substantial near-by summer colony, at some time in the future.

The site chosen for the location of the proposed tank was on land adjoining a beautiful residential area with buildings of colonial architecture, and it was felt that a structure of harmonious lines should be erected. This was accomplished by selecting a Horton elevated tank of Colonial design with a capacity of 500,000 gals., supported on 10 tubular steel columns. The columns are 83 ft. high above the foundations, making the elevation of the overflow of the tank 108 feet above the ground. The top of the new tank is about 35 feet higher than the present standpipe, resulting in an increased pressure throughout the City of about 15 lbs. per sq. in.

This installation is one of the many that have demonstrated the numerous advantages of modern elevated storage. For information, please address our nearest office.

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Liberty Bank Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Supply and Purification

Small City Saves $6,000 Annually with New Pumps

HASTINGS, MICH., a town of 5,000 population, until seven years ago was using steam-driven pumps that cost the town 6 cents per 1,000 gallons for fuel and maintenance. This equipment consisted of three steam-driven compound pumps of 1,500-gph capacity and one steam-driven compound pump of 2,000-gph capacity. Under the direction of Bert Sparks, City Engineer, a new electric pumping system was installed which has saved the city $6,372 a year in operating and maintenance costs. The new installation consists of three Allis-Chalmers electrically driven pumps, two of 350 gpm and one of 250 gpm capacity. All three occupy the space formerly taken by one of the old steam-driven pumps.

Chief among the advantages gained in this installation was the drop in cost of operation from 6 cents to 1¾ cents per 1,000 gallons. This amounted to an actual average saving of $6,372 per year. In the seven years since these units were put in, no repairs have been necessary on the electric pumps or motors. Mr. Sparks reports: "There has not been a total power interruption of 30 minutes in all that time. And the plant is cleaner and quieter, a fact which pleases neighboring residents very much."

Two years ago a 900-gpm pump was purchased out of the savings in operation of the other pumps. This pump now operates at a new well at some distance from the main water works. All the city's pumps operate on a 150-foot head and are used to pump water direct from artesian wells to the mains.

As a direct result of the savings, water rates have been reduced 15 per cent, with an actual increase in water service and fire protection. Also, a reserve fund of more than $11,000 has been built up where a deficit had previously existed.

Features of Filter Plant at Biddeford, Maine

A UNIQUE FEATURE of the new rapid-sand filtration plant at Biddeford, Maine, the operation of which was described in considerable detail by Edwin T. McDowell, Superintendent, Biddeford & Saco Water Co., in Vol. 53, No. 2, *Journal of the New England Water Works Association*, is that not one of the walls which retain water is exposed to weathering. The concrete walls of the substructure which support the building above are separate and removed from the walls of the filters and clear wells by an 8-inch air space. This of course added something to the cost of the project, but it is believed it will get away from the difficulty caused by seepage and consequent ice formation in winter which tends to disintegrate concrete.

The six filter units in the plant are rectangular in shape with concrete clear wells below. They are arranged in two rows of three units each, with a gallery between, which contains the pipe gallery and operating equipment. Each unit has venturi controllers, quick-opening hydraulically operated valves, loss-of-head and rate-of-flow gages and control tables. At the conventional rate of 125 mgad the capacity of the plant is about 8 mgd.

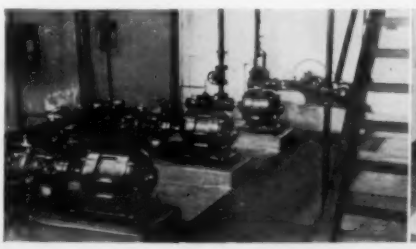
The underdrain system is made of 2½-inch copper tubes with 5/16-inch holes drilled in the bottom and a layer of coarse crushed trap rock. The copper tubes are all connected to a common concrete conduit located at the center of the filter unit and running at right angles to the pipe gallery. Above the layer of trap rock is a layer of gravel 15½ inches thick, ranging in size from ¾- to 1/10-inch. The filtering medium is composed of a 3-inch layer of torpedo sand and 30 inches of Cape May filter sand having an effective size of 0.48-mm and a uniformity coefficient of 1.35. The wash-water troughs are of special design and are fabricated of copper-bearing steel. The troughs are connected directly to a concrete conduit which is immediately above and parallel to the clear water conduit.

Problems of Coagulation

IN A PAPER presented before the Canadian Section of the American Water Works Association, H. P. Stockwell, Chemical Engineer of the Water Purification Plant at Ottawa, Ont., summarized the problems of coagulation very well indeed, and we are pleased to reprint them here for the benefit of our readers.

"The impurities in natural water supplies are to a great extent colloidal in nature and may be removed by rapid sand filtration, which calls for chemical pretreatment involving coagulation. Alum is the coagulant most used, although others are more particularly suited for certain types of water. Good conditioning of the floc is essential, addition of hydrous silica sols having been found by Baylis to greatly improve coagulation with alum. Colored waters are very prevalent and require special conditions for treatment, the intensity of color being variable with the pH of the water.

"For this type of raw supply the coagulant requirements are greatly influenced by the amounts of acidity and alkalinity present, the pH of the raw supply giving no indication of the dosage required. Adjustment of raw water pH with sulphuric acid would result in savings of coagulant, but is not recommended, as it might impair public confidence in the potability of the water supply. The effect of carbon dioxide on alum dosage is of academic interest, although there is a possibility of practical application in moderate amount to colored water of fairly low alkalinity."



IMPROVEMENTS IN THE PUMPING SERVICE OF THE HASTINGS, MICH., WATER WORKS

Left to right—The three Allis-Chalmers pumps installed three years ago; the 900-gpm unit installed in 1937; and the city-owned transformer bank supplying power to the new 900-gpm unit. Above—Bert Sparks, City Engineer, under whose direction these improvements have been made

TY

CUT-

is no longer

TODAY there is no excuse for a modern city
for days—no excuse for outlying districts
half buried for weeks after every storm.

Modern snow removal is fast—and cheap. The
and packs the snow into the largest truck in
filling it to several times its capacity as compared to other methods
of loading. There are no delays. It moves down the street loading
on the traffic side giving a clean job right to the curb. Snogo means
fast handling, fewer truck trips, lower cost haulage per ton of snow
—and business as usual.

Outlying districts "get out of the blizzard" in a reasonable time. Fire
department delays are reduced and the way is clear for traffic and
delivery.

There is a Snogo for every budget. Investigate Snogo and plan to
give your city real snow insurance. New low prices will interest you.

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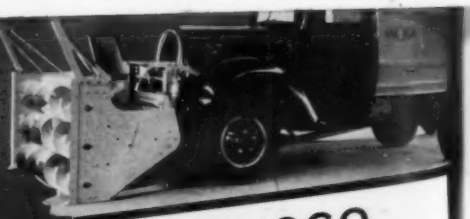

A SNOGO for Every Budget!

There is a complete line of Snogos from the 1½ ton Marmon-Herrington All Whe Drive Ford conversion to t largest four wheel drive tru A size for every muni budget.

SNOGO

FOR COMPLETE SNOW REMOVAL

Sewage Treatment and Sewer Service

A One-Man-Operated Sewage Works

THE DELPHOS, OHIO, sewage-treatment plant is one of those many plants throughout the country which are one-man-operated, but not as a matter of the operator's choice. Jack Wahmhoff reported at the Ohio Conference on Sewage Treatment that his official title might read "superintendent, chief operator, chemist, sampler, dish-washer,

like that offsets many extra hours of work. To be the lone operator of a 50,000-, or a 100,000-, or even a 140,000-gallon plant is a privilege, according to Mr. Wahmhoff, but to make it one of the best-operated and maintained is his goal.

"Rental" Not Correct Term for Sewer Service Charge

AT THE ELEVENTH ANNUAL MEETING of the New York State Sewage Works

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They then told the city officials that to pay rent for something which they already own is to pay twice for the same thing. This made it necessary to take every opportunity to explain that a sewer-rental charge is not rent in the popular sense, but is a direct charge for a service rendered. However, even after a year's operation, this question still comes up and causes some dissatisfaction. Where this method of financing is to be discussed with the general public, it is urged that the word "rental" be avoided and the more appropriate term "sewer service charge" be used.

Packing Plants Pay Well for Sewage Treatment

THE PACKING INDUSTRIES of South St. Paul, Minn., have agreed to pay 65 per cent of the cost of a new $960,000 sewage-treatment plant, as well as to pay 90 per cent of the maintenance costs. Sewage from the packing plants is estimated to be equivalent to that of a city of 200,000 population, and the population of South St. Paul is only 10,000.

Because of the extremely heavy load of packing-plant waste, South St. Paul is not included in the metropolitan sewage district of Minneapolis and St. Paul. When the district was established, in 1933, it was believed that the packing plants would receive too liberal treatment if they were handled in the same manner as other industries in the sanitary district.

YPE

-OFF

are simple at Delphos and little difficulty has been experienced. Reports are valuable and there is no telling when certain information will be needed. Records of weather, direction of wind, unusual happenings or changes in sewage often prove worth many times the trouble to make them.

At Delphos the afternoon is not exactly called a schedule, but the operator likes to feel the major part of his routine work has been done so that the second part of the day is devoted to doing odd jobs, repairs, painting, and ground work; that is, the things that make a big showing.

One of the highest compliments paid to the sewage-treatment plant at Delphos came from a local aviator, who said: "The sewage plant is the prettiest spot in town, and I can look at them all from the air." A tribute

T THE POLLUTION INSTEAD?

DRAWN FOR THE AMERICAN CITY BY ART KNOERZER

is no longer expensive

TODAY there is no excuse for a modern city being snow smothered for days—no excuse for outlying districts being snowbound and half buried for weeks after every storm.

Modern snow removal is fast—and cheap. The Snogo Sno Loader loads and packs the snow into the largest truck in a matter of seconds, filling it to several times its capacity as compared to other methods of loading. There are no delays. It moves down the street loading on the traffic side giving a clean job right to the curb. Snogo means fast handling, fewer truck trips, lower cost haulage per ton of snow—and business as usual.

Outlying districts "get out of the blizzard" in a reasonable time. Fire department delays are reduced and the way is clear for traffic and delivery.

There is a Snogo for every budget. Investigate Snogo and plan to give your city real snow insurance. New low prices will interest you.

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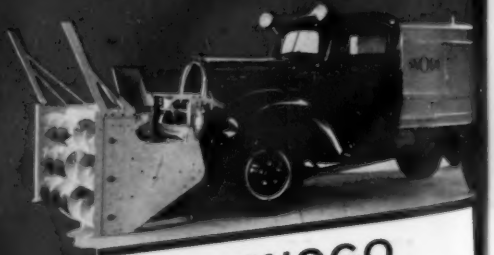


A SNOGO for Every Budget!

There is a complete line of Snogos from the 1½ ton Marmon-Herrington All Wheel Drive Ford conversion to the largest four wheel drive truck. A size for every municipal budget.

SNOGO

FOR COMPLETE SNOW REMOVAL

Sewage Treatment and Sewer Service

A One-Man-Operated Sewage Works

THE DELPHOS, OHIO, sewage-treatment plant is one of those many plants throughout the country which are one-man-operated, but not as a matter of the operator's choice. Jack Wahmhoff reported at the Ohio Conference on Sewage Treatment that his official title might read "superintendent, chief operator, chemist, sampler, dish-washer, laborer, janitor, mechanic, electrician, plumber, carpenter, painter, keeper of the various pump stations, landscape gardener, trouble shooter, and lone promoter for the advancement of goodwill toward sewage treatment."

At Delphos the operator supposedly has a working day from 8 A.M. to 4 P.M., but the regular mid-evening check-up goes unmentioned yet eases his conscience that all is well at the plant. Often a few minutes' work at the right time saves a half-day's work later on.

The usual daily schedule to keep the plant running smoothly starts with a tour of inspection the first thing in the morning. Then, should anything be out of order, the day's work can be altered to correct the trouble; otherwise, all the meters are read and the readings recorded. The sewage flow, gas produced, power used, chlorine dosed, and any other operating results, are computed and checked, and Mr. Wahmhoff always asks himself the question, "Is the answer reasonable?"

Among the other jobs are the collection of the 24-hour composites and their testing. Some plants are unable to provide means for continuous sampling, but, fortunately, arrangements are simple at Delphos and little difficulty has been experienced. Reports are valuable and there is no telling when certain information will be needed. Records of weather, direction of wind, unusual happenings or changes in sewage often prove worth many times the trouble to make them.

At Delphos the afternoon is not exactly called a schedule, but the operator likes to feel the major part of his routine work has been done so that the second part of the day is devoted to doing odd jobs, repairs, painting, and ground work; that is, the things that make a big showing.

One of the highest compliments paid to the sewage-treatment plant at Delphos came from a local aviator, who said: "The sewage plant is the prettiest spot in town, and I can look at them all from the air." A tribute like that offsets many extra hours of work. To be the lone operator of a 50,000-, or a 100,000-, or even a 140,000-gallon plant is a privilege, according to Mr. Wahmhoff, but to make it one of the best-operated and maintained is his goal.

"Rental" Not Correct Term for Sewer Service Charge

AT THE ELEVENTH ANNUAL MEETING of the New York State Sewage Works Association, Robert A. Allton, Consulting Engineer, Division of Sewage Treatment, Columbus, Ohio, raised an objection to the use of the word "rental" in connection with a charge for sewer service. He admitted that it might seem like a minor point, but in Columbus it has caused much misunderstanding and a small amount of opposition to this method of raising funds for the operation of sewerage works. Those who drafted the enabling legislation used the word, in accordance with accounting practice, to mean a charge or income. However, to the man on the street "rental" is a payment which he makes for something which he rents and uses, such as a house or an apartment. Consequently, when the sewer-rental ordinance was passed, the city of Columbus was immediately asked this question—"Why should citizens pay rent for the use of the sewers and sewage-treatment works when the city already owns them and is paying for them with tax money?"

They then told the city officials that to pay rent for something which they already own is to pay twice for the same thing. This made it necessary to take every opportunity to explain that a sewer-rental charge is not rent in the popular sense, but is a direct charge for a service rendered. However, even after a year's operation, this question still comes up and causes some dissatisfaction. Where this method of financing is to be discussed with the general public, it is urged that the word "rental" be avoided and the more appropriate term "sewer service charge" be used.

Packing Plants Pay Well for Sewage Treatment

THE PACKING INDUSTRIES of South St. Paul, Minn., have agreed to pay 65 per cent of the cost of a new $960,000 sewage-treatment plant, as well as to pay 90 per cent of the maintenance costs. Sewage from the packing plants is estimated to be equivalent to that of a city of 200,000 population, and the population of South St. Paul is only 10,000.

Because of the extremely heavy load of packing-plant waste, South St. Paul is not included in the metropolitan sewage district of Minneapolis and St. Paul. When the district was established, in 1933, it was believed that the packing plants would receive too liberal treatment if they were handled in the same manner as other industries in the sanitary district.

WHY NOT ARREST THE POLLUTION INSTEAD?

DRAWN FOR THE AMERICAN CITY BY ART KNOERZER

How Are *You* Solving the Traffic Problem?

Express Highways

Parking Lots

Street Widening

WITH PROJECTS THAT LOAD TAXPAYERS WITH DEBT?

Or WITH TRANSIT THAT PAYS ITS OWN WAY?

Have you considered your traffic problem in relation to your public transit system? Some public works, it's true, are often needed to relieve traffic congestion, but no city can afford to depend on this alone. Nearly every city, however, can immediately improve traffic conditions by revitalizing its public transit—the most efficient user of street space.

We are not advocating subsidy of public transit. Given fair treatment and encouragement to modernize, your local transit system can pay its own way. Modern electric vehicles—with their phenomenal speed, quietness, and comfort—have proved their ability to win and keep new riders.

One trolley coach can comfortably seat all the people who normally ride in 24 automobiles; a modern street car can seat as many as now require 36 private autos.* Figures for rapid-transit vehicles are still higher.

Clearly, increased use of public transit can reduce traffic congestion. Why not support a program to modernize your transit? It will be far more popular with taxpayers than staggering expenditures for street projects which load them with unfairly proportioned taxes—and never provide more than a partial solution of the problem. General Electric, Schenectady, N. Y.

*Based on the national city average of 1.72 passengers per automobile.

REVITALIZE PUBLIC TRANSIT TO REDUCE TRAFFIC CONGESTION

GENERAL ELECTRIC

232-126

Street Maintenance—An All-Year Job

PENNSYLVANIA DEPARTMENT OF HIGHWAYS PHOTO

A Good Roads Champion Plow Clearing Snow from a Heavily Drifted State Highway

Preventing Skids on Icy Streets

A SPECIAL RESEARCH PROJECT on skid-resistance tests on icy pavements, using various kinds and sizes of abrasives with varying amounts of calcium chloride in flake, powdered and solution form, and at various intervals following treatment, were conducted during the winter of 1938-39 at Fort Dodge, Iowa, by the Iowa Engineering Experiment Station in cooperation with the Iowa State Highway Department.

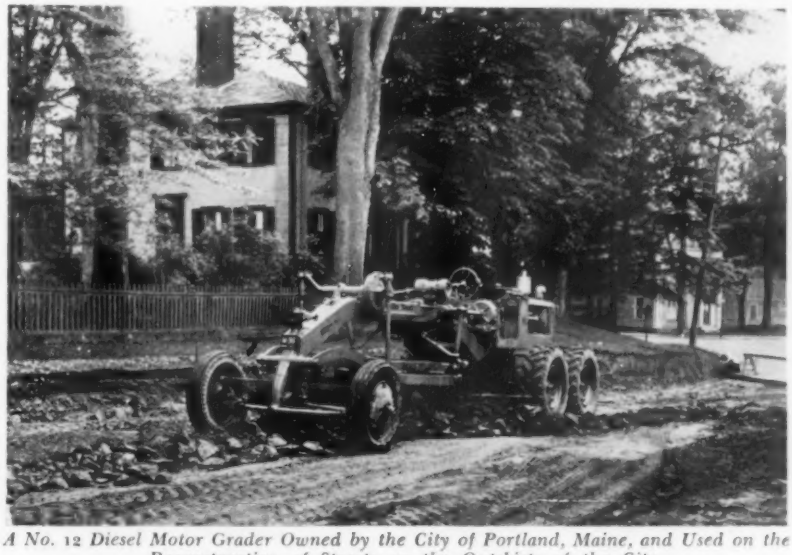
The report states that "all dry abrasives not treated with calcium chloride proved to be ineffective and were easily brushed off the road by the tires." The results indicate that there was no difference in the skid resistance of untreated sand or cinders of the same size. However, treated coarse cinders were 42 per cent more efficient than treated coarse sand, while treated fine cinders were 31 per cent better than treated fine sand. The results show that the skid resistance was approximately the same for small and larger sizes of abrasives used.

Skid-resistance averages for various amounts of calcium chloride added to the abrasives showed that 50 pounds of the chloride per cubic yard increased friction 56 per cent over untreated abrasives, while 100 pounds increased the friction 70 per cent, and 150 pounds increased friction 108 per cent. The skid-resistance averages for various amounts of treated abrasives added showed that on comparable sections ½-pound per square yard of abrasives increases friction 109 per cent over plain ice, and 1½ pounds per square yard increases the friction 161 per cent. The skid resistance of ½-pound of treated abrasives per square yard of ice with 50 pounds of calcium chloride per cubic yard of abrasives was greater than that of 1½ pounds of untreated abrasive per square yard.

A study of the distance required to stop on icy pavements at 20 miles per hour speed showed that when the ice was covered with ½-pound per square yard of sand treated with flake calcium chloride at 50 pounds per cubic yard, the vehicle stopped in 79 feet; while when 1½ pounds of untreated sand were used per square yard, the vehicle stopped in 81 feet; on plain ice, untreated, the vehicle did not stop until 157 feet had been traversed.

The report was prepared by R. A. Moyer, Research Associate Professor of Highway Engineering, and H. O. Ustrud, Research Assistant, Iowa Engineering Experiment Station, Ames, Iowa.

A. R. B. A.
Municipal Officials' Division
Chicago, Ill.
January 29-February 2, 1940



A No. 12 Diesel Motor Grader Owned by the City of Portland, Maine, and Used on the Reconstruction of Streets on the Outskirts of the City

Loading Snow with a Trackson High Shovel in Cicero, Ill., Last Winter After the Heavy Snowfall Had Been Plowed to the Side of the Street

Three-Fold Fire Alarm Box Accessibly and Visibly Mounted on a Type U1000-6 Pedestal

MORE ECONOMIC WASTE

because of a delayed alarm

This was once a flourishing chemical plant employing many and, by reason of its payroll and taxes, it did much for the economic welfare of the community.

Now look at it! A shambles that may never be rebuilt. People out of employment, tax revenue written off the books . . . all because of inadequacy in fire protection.

Fire alarm boxes that are hard to find or placed at too infrequent points mean DELAYED ALARMS. Every fire chief knows that the first few minutes . . . seconds . . . are most important in controlling a fire. Check up on conditions in your town.

GAMEWELL OFFERS FULL COOPERATION IN PLANNING FIRE PROTECTION

Make the Three-Fold Fire Alarm System your city's "first line of defense against Fire!"

THE GAMEWELL COMPANY

NEWTON UPPER FALLS MASSACHUSETTS

Public Safety

Bullet-Proof Booth Lowers Bank Insurance

THE NEW BULLET-PROOF Police Control Booth shown here is the best piece of equipment that we have. It is located at the busiest intersection of our city, with State Roads 15 and 4 and U. S. Road 33 all passing the intersection. Two banks are located on this corner, and the front and only entrance to each bank is not more than 75 feet from our booth and is visible to us at all times. The banks favored the erection of the booth to the extent of donating $1,000 for the glass and gunports. The idea originated with one of our ex-mayors who had seen a policeman standing on this same intersection for years and years during all kinds of weather.

At present the only radio we have is a receiver for the Indiana State Police; but the first of the year we will install two-way police radio in connection with the Elkhart County Sheriff's Office.

I believe that a similar booth installed in any other city having a similar location of banks and business-center activities, would be a very good investment.

RAY D. AUER,
Chief of Police, Goshen, Ind.

Concrete Police Booth at Goshen, Ind.

Special Training for Policemen

IT IS A GRIEVOUS FACT that there are a number of communities which absolutely refuse to take advantage of police training. In others it has been found that certain officers have been sent to the National Police Academy as a mere sham and a sop to public opinion. They have gone there, many of them, under personal sacrifice; they have given of their time and their efforts and returned to their communities only to find themselves blocked at every turn by jealousies or by an absolute aversion to advancement in police methods. Sometimes the stumbling block has been an older officer, too set in his ways to admit that there is such a thing as scientific crime detection; but all too often the obstacle has been the intrusion of corrupt politics. In case after case the graduate has been shunted from one job to another, or pigeonholed with the promise of later activity, or the excuse of insufficient funds with which to conduct the necessary schools.

JOHN EDGAR HOOVER,
Director, F.B.I., Washington, D. C.

New Fire Prevention Stunt

I HAVE WITNESSED a very effective fire prevention program which was formulated at a meeting of the Charleston Chamber of Commerce and the insurance men of the city the week previous to Fire Prevention Week. George Gow, a technician at the local Columbia Broadcasting System network station, suggested that a broadcast be given directly from Fire Department headquarters in downtown Charleston.

The broadcast began at 9:30 P.M. Mr. Gow described the headquarters building as to equipment and general appearance. After an interview with Chief J. L. McLane on how to report a fire and what the Department does about an alarm, an alarm was sent in from the box located outside the station door.

A wire had been run from the truck of the broadcasting station to the rear platform of the American-LaFrance pumper which was to answer the alarm, supposedly coming from the State Capitol twelve blocks east. Mr. Gow rode on the hose in the back of the pumper, broadcasting the entire way of the run, the radio car following with the wire connected to Mr. Gow's microphone stretched between them. At the Capitol Building Governor Homer A. Holt spoke a few words on fire prevention.

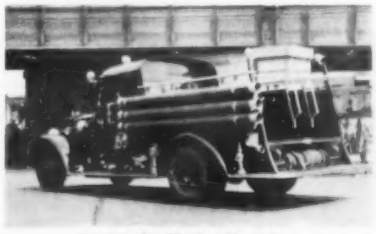
ROBERT E. THROCKMORTON,
Atlantic Greyhound Corporation,
Charleston, W. Va.

Fire Trucks on Parade

THESE ARE THREE of the 300 pieces of fire apparatus brought together by the summer national tournament of volunteer firemen at Flushing, N. Y. The first is a Seagrave 1939 canopy-cab pumping engine seating three men in the cab and four at the rear. It is equipped with a 500-gallon two-stage centrifugal pump, says Thomas L. Jarvis, Chief of the Katonah, N. Y., Fire Department.

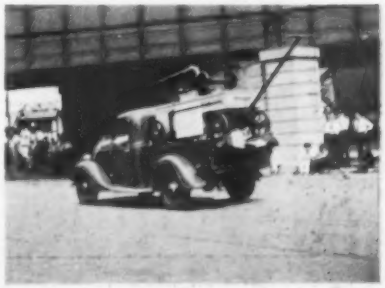
The second truck is an $18,000 Seagrave aerial with a 75-foot all-steel ladder of 100 per cent hydraulic operation. Its equipment includes floodlights, portable generator, and a battery of 75-pound Lux tanks, says Fire Chief Louis F. Attera of Suffern, N. Y.

The third vehicle carries a small truck built about 1765 in Philadelphia. The leather hose has long since disappeared but the centrifugal pump still works. A duplicate of this truck was presented to Alexandria, Va., by George Washington and is now in Baltimore.



Katonah, N. Y., Pumper

Suffern, N. Y., Aerial



Nozzle Is on South Nyack's 1765 Hand Pump

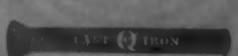
THEY RELAID IT–WOULDN'T YOU

Highway improvements necessitated relocating a 36-inch, 46-year-old cast iron water main at Fort Worth, Texas. This pipe is shown above after being removed from the old trench.

At left is a close-up, unretouched photograph of a section of the relocated main shown here. Note fine condition of pipe interior.

Above is a photograph of the old pipe being relaid in a new location after 46 years of continuous service.

Salvage value is one of the three major economies of cast iron pipe. Long life and low maintenance cost complete the thrift story of this standard material for underground mains, know as Public Tax Saver No. 1.



Look for the "Q-Check" Registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1015 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

CAST IRON PIPE

PUBLIC TAX SAVER NO. 1

Vol. LIV, No. 12 The American City DECEMBER, 1939

Talking It Over with the Taxpayer

Helpful Hints for Forthcoming Annual Reports

DURING the present decade several factors have helped to focus increased attention and interest on municipal reporting. The depression caused serious fiscal problems for city governments, and growing taxes for the citizen. The municipal official has felt the necessity for gaining intelligent and sympathetic citizen support in solving these financial problems; the citizen, while demanding still more governmental services, is asking the reasons for his growing taxes. With the rise of totalitarianism overseas and the consequent interest in revitalizing democracy at home, the importance of citizen participation in government is being increasingly recognized and emphasized. The municipal report gives an account to the citizen-stockholder of the services—and the importance of these services—that government renders, sometimes wastefully but often at bargain prices, for his tax money. It arouses his interest in his government and supplies him with the information necessary for intelligent participation in that government.

Cutting Costs

Expense is one of the obstacles which many cities, the smaller ones particularly, feel prohibits them from issuing an annual report. Several municipalities, however, have proved that large expense is not a necessity in issuing a report, nor in issuing a good report. The best reports are not necessarily those on which the most money has been spent. The report of Johnstown, Pa., a leaflet of only 10 small pages, has particular citizen appeal. Income and expenditures for the year are summarized by pie charts and tables; city officials are listed. City services are described in an entertaining story of a typical day in the lives of "the Millers, an average Johnstown family." East Cleveland, Ohio, Plymouth, Mass., and Princeton, N. J., issue brief 2- to 4-page letters to the taxpayers telling how tax money is spent, describing general services and particular achievements of the year, and making recommendations for

MANY CITIES ARE NOW REPORTING THEIR GOVERNMENT SERVICES IN ANNUAL REPORTS AS ATTRACTIVE AS ADVERTISING LEAFLETS

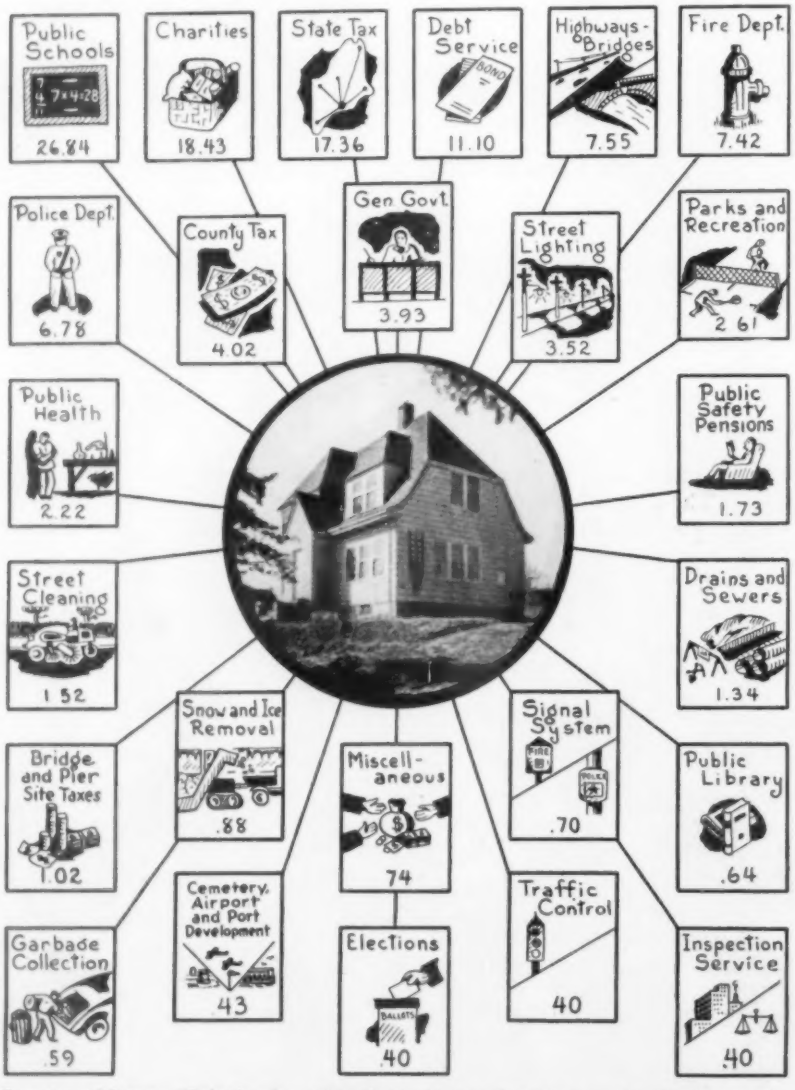
The reports shown above (bottom to top and left to right) are from Charlotte, N. C.; Portland, Ore.; Pasadena, Calif.; New York, N. Y.; Bronxville, N. Y.; Rochester, N. Y.; Schenectady, N. Y.; Tappahannock, Va.; Berkeley, Calif.; Provo, Utah; Blackburn and Mitcham, Australia; Borough of Manhattan, New York.

the future. Tappahannock, Va., and the borough of West Reading, Pa., have cut expenses by mimeographing their reports. Although elaborate illustrations cannot be included in mimeographed reports, charts and graphs, and even rough sketches and cartoons, can be used effectively—as illustrated by the Tappahannock report. Several cities have used other substitutes for regular letter-press printing to reduce costs. Portland's report is lithographed; Tallahassee, Fla., has issued a typewritten lithoprinted report.

The International City Managers' Association has just issued a manual, "Specifications for the Annual Municipal Report,"* which gives the following pointers for planning an economical report (the manual elaborates each point):

1. The report must be brief.
2. Select a page size which fits your printer's equipment.
3. Run-around, because of expense, should be used with caution.
4. The number of pages in the report should be a multiple of 8.
5. The report should be carefully planned and the copy thoroughly edited before being sent to the printer.
6. If more than 2,500 copies are to be printed, paper and running costs are of greatest consequence.
   (a) Body type should be of moderate size.
   (b) A two-column format is usually economical.
   (c) Avoid excessively wide margins.
   (d) Avoid excessive leading of type.
   (e) Select a page size which permits the use of a standard stock-size paper without waste.
   (f) Select an economical paper.
7. Conversely, if less than 2,500 copies are printed, a format containing fewer words per page will not greatly increase costs.

* Obtainable from the Association, 1313 E. 60th St., Chicago, Ill. $1.50.



PORTLAND, MAINE.—*"Bringing home" to the taxpayer what his taxes buy for him. Disbursement of the 1938 tax bill—$122.56 on the average family home valued at $2,575.00*

Getting the Report to All the Citizens

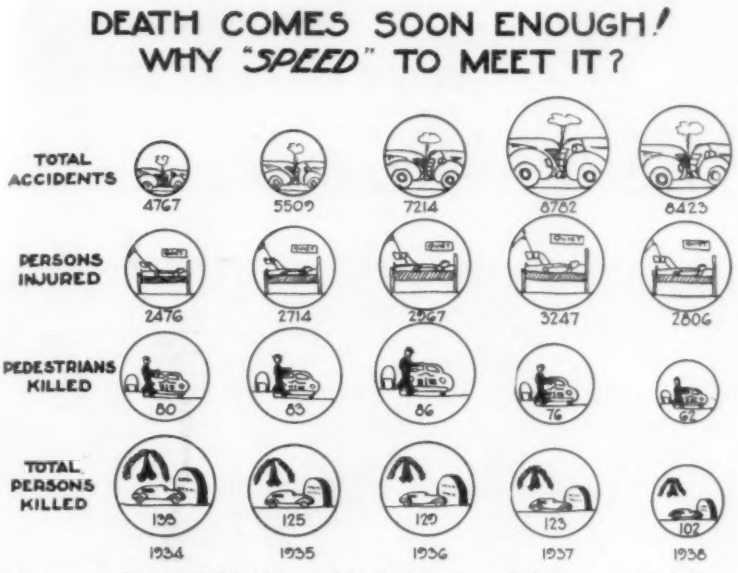
The two main criticisms that the International City Managers' Association makes of the reports this year are that they reach too few people, and are late in appearing.

A good part of the purpose of the report—to arouse general citizen understanding of government and participation in it—is lost if the report is seen by only a few people. The ICMA has estimated that the average city issues only about one report for every 25 persons, but that "a city of 5,000 . . . could issue enough reports to supply one to every family, or one for every four persons in the city, for an estimated cost of less than 5 cents per person, if the report were made brief—about 30 pages—and were mimeographed or duplicated by some other inexpensive process." If even this is impossible, the Association recommends that citizens be given an opportunity to signify their desire to receive reports, by filling out applications enclosed with the water bill, or inserted in the city newspaper in the form of a detachable coupon. In any case, copies should be sent at least to civic and service groups and clubs, the public libraries, municipal officials and employees, state and county offices, state and national leagues of municipalities, municipal associations and research bureaus, universities near the city, and to anyone requesting copies.

One of the best means of distribution is through the schoolroom, where the future citizen should be encouraged to make himself familiar with the report's contents. Milwaukee—which has this year published a novel report in the form of a 12 x 18-inch newspaper—distributed a copy to each school child in the city with the request that it be taken home. Parents of more than one child were asked to share copies with neighbors having no children. Extra copies were distributed at libraries. Milwaukee hoped to reach every home in the city with its annual story. In small towns reports can be sent with the tax or water bill; or members of police and fire departments, civics and government students in high school or college, or Boy Scouts, can deliver the reports to each home.

The Report Should Be News

It is also a futile business to spend time and money to make a report attractive and inviting to read if, by the time it is published, it is "old stuff"—no longer of interest because of later developments. There is little interest



CINCINNATI, OHIO.—*Quick picture of traffic hazards, and the rate at which they are being reduced*

in knowing about plans for repaving Main Street when everyone has been driving over the new pavement for weeks.

The annual report should be news—timely and fresh. It should come out six weeks or sooner after the period covered. But most of the reports appear much later than this, some nearer the end of the following year than that of the year covered.

Early publication is greatly facilitated if department and bureau heads submit their reports promptly to one person who regularly has the job of editing and preparing the report for press, and who can, during the year, gather material and illustrations, and make plans and preparations for the printing, format and other mechanical details of publication.

There is nothing else that leaves a prospective reader quite so cold as a local newspaper with yesterday's date. The annual report appearing in August, 1939—or even February—with the prominent front title, "Annual Report 1938," has somewhat the same effect on the average reader. Practically all annual municipal reports, however, are dated for the year which they cover rather than the year in which they are published, even though daily newspapers, monthly magazines and many yearbooks carry the date of publication rather than the date of the occurrences reported. The report covering the city government of 1939 is in effect a report of the city at the onset of 1940, as events and activities of 1939 have left it. Also, it will contain, in most cases, a directory of 1940 officials, 1940 budget and tax rate, and plans and recommendations for 1940. Prospective readers of reports appearing next year will be apt to read beyond some such title as "Your City 1940," with a subtitle—to allow of no misunderstanding—"Annual Report to December, 1939."

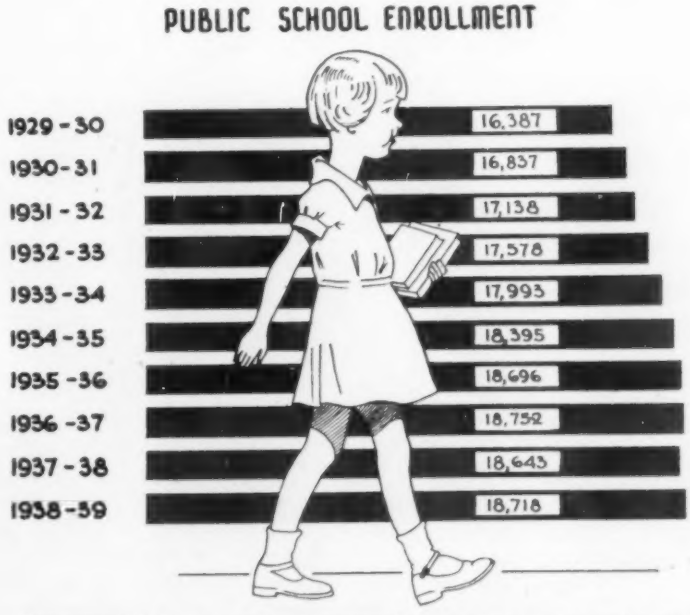
Getting the Taxpayer's Viewpoint

To sum up, more reports should reach more people earlier each year in more cities.

Once received, they must be read. Whether a report is read or not, depends on the report itself. The attitude of the American public has notoriously been: "Why should I be interested in government? Let it take care of itself." And yet, contrary to appearances, the activities of his municipal government are of intrinsic interest to every citizen. If he has been indifferent to them, one very good reason is the indifferent way they have been reported to him. Until recently, municipal government has been far, far behind the business man in selling its goods to the public. And yet the goods of government concern the citizen as vitally as those of any business.

Whether his breakfast milk is safe to drink; whether he has water for a bath; whether a store can be built next to his house which will lower his property values; whether his children are safe walking to school; whether he can get to and from his destination quickly and easily;—these, and a hundred other matters affecting the citizen's general welfare, standard of living and efficiency, are the concern of his city government. Moreover, his city government is his own business. He is financing it; choosing and hiring the people to run it. Again, many of the activities of city government have natural human appeal. What is more dramatic than the search and capture of the criminal, the fire engine speeding to the fire? Even a snow-plow or sweeper, a dump-truck or tractor in action, has unfailing appeal to the masculine half of the citizenry. And the human appeal behind the welfare client, the delinquent boy, the slum dweller who needs decent housing, is unlimited. The editor of a municipal report might take a tip or two from the dime novel.

(Concluded on page 71)



CHARLOTTE, N. C.—*Illustration superimposed on a graph. New and effective way of showing trends at a glance*

Recreation on the Reconstructed Bank of the Raritan River

This scene is typical of the appearance Johnson Park presented when it was donated to the city. One-third of the area was swampland, bordered by mudflats and uncleared woodland

TRANSFORMATION of a rocky wasteland on the north bank of the Raritan River into a 148-acre municipal recreation area is being performed by 279 WPA workers at Johnson Park, Piscataway Township, opposite New Brunswick, N. J.

An area considered unsightly by the Middlesex County Board of Freeholders, which sponsored the project, has been converted into a scenic picture. Rolling lawns, thousands of shade trees and shrubs, two artificial lakes spanned by rustic bridges, tree-lined pathways atop the completely reconstructed river bank, and winding cinder walks through colorful shrubbery, have made the area beautiful. The reconstructed river bank eliminates flood as a menace to the park. More than 50,000 cubic yards of earth were moved in order to raise the river bank and to landscape the rest of the park.

A 40-acre wooded tract and meadowland, forming a natural grove area, was improved upon by landscaping and tree-planting the whole section, and will serve as the picnic grounds. Here fifty stone fireplaces are under construction. Nearby are placed picnic tables and benches. In the grove are twelve shuffleboards, two shelters and two comfort stations. On its fringe are two tennis courts and a playground for smaller children. Cinder paths wind through the grove and along the river bank where it will be shaded by newly planted trees.

Industrial Workers Benefit

WPA workers are clearing 40,000 square feet for parking space and laying 2,200 square yards of permanent paving. By spring, WPA engineers estimate, the project will be finished, providing an ideal outdoor recreational center for the public. It will make recreation available to thousands of industrial workers concentrated in New Brunswick and Highland Park.

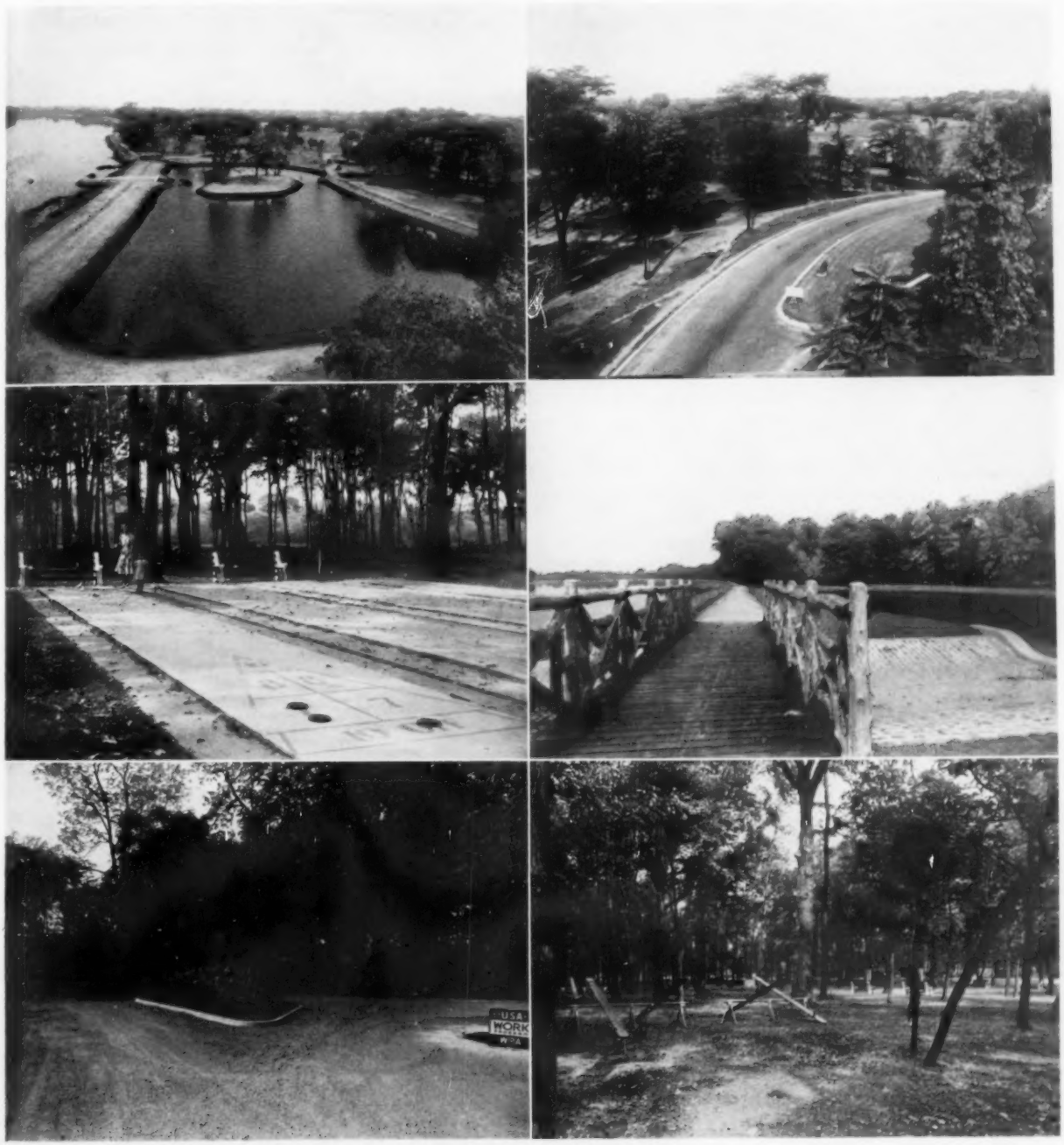
County officials had that objective in mind in sponsoring the development, besides the fact that a park would maintain the county's residence desirability on a par with that of adjacent counties. They were anxious, too, to provide facilities for the population in the northern section of the county similar to those which the southern end—Perth Amboy and surrounding towns—had enjoyed for years.

Most of the property, starting at the Pennsylvania Railroad bridge to New Brunswick, and extending from the river to River Road, was ceded to the county by Robert and Seward Johnson, New Brunswick industrialists. Another section was taken by condemnation.

Conversion of the area into Johnson Park, which will cost approximately $300,000 in Federal funds, is the answer to some of the county's problems. Not only will

healthful recreation be made available to one of the heaviest populated areas at little cost to the county, but an unsightly section, which was viewed every day by Pennsylvania Railroad commuters and motorists on River Road, is changed to one of beauty, and relief costs have been reduced by the 279 men WPA was able to put to work.

Not only here, but elsewhere along the Raritan River, WPA has made healthful improvements. The Raritan River was once a popular spot for boating and other water sports, but with the growth in population and industry along its banks, the river became increasingly polluted and almost abandoned as a recreational area. WPA workers have cleaned up the shore lines and constructed sewage-disposal plants for many of the communities which hug the river.



SCENES IN THE TRANSFORMED AREA ON THE NORTH BANK OF THE RARITAN RIVER

Beginning at top and continuing from left to right: Mudflats on the shore have been replaced by artificial ponds, connected to the Raritan River by culverts. A footpath follows the shore. View of the park from Highway S-28, looking west. Shuffleboard courts add to the enjoyment of picnic grounds. Attractive rustic bridges carry the river path over culverts. Johnson Park entrance roads are wide, with floral center islands. The tree-shaded picnic areas have children's playgrounds

Wood Pulp Digester Liquor Used as a Dust Palliative

A Waste Product Offered Free to City of Vancouver, Wash., Helps Solve the Problem of Its Disposal

By HENRY W. YOUNG

OVER 60 miles of streets in Vancouver, Wash., are being sprinkled with the waste liquor from four large wood pulp digesters of the Columbia River Paper Mills. A contract was made in August between the city and the paper mill company calling for the free use of this liquor over a period of five years.

Use of sulphite liquor from paper mills as a dust palliative is not altogether new. It is being used at Camas, Wash., not far from Vancouver, from the digesters of the Crown - Willamette Paper Co. There is also at least one concentrated form of the by-product prepared for sale commercially. But Vancouver decided to use the liquor just as it comes from the digesters, with all the water content, since it was being donated to the city at no cost.

According to J. L. Henderson, Vancouver City Engineer, the liquor acts as a natural binder of the loose, earthy materials of the road surface and also puts a coating on the coarser rock and gravel. The properties which render it a binder are the pitch and resin extracted from the wood pulp in the digesting process and left in the liquor. It sets up the earth and macadam roads in good shape and allays dust in dry weather with one application. If the road is scheduled for oiling, two applications will be given, for it has been found that the liquor also acts as an excellent stabilizer in preparing the road base for oiling.

Vancouver's streets have been surfaced with a fine pea gravel secured from a city-owned pit. This material grinds up very quickly into fines which are exceedingly dusty during the dry months. The city has an oiling program under way calling for 8 or 10 miles of street each year. But at that rate the dust evil could not be remedied for a number of years, since sprinkling with water is expensive and next to useless in the hot weather.

Treatment with digester liquor is not a permanent cure for dust, for heavy rains will leach it out. But it takes more than an occasional shower to do this. In the climate of Vancouver, where there is almost no rain for three or four months during the summer, the treatment is good for at least one dusty season each year. It turns the road surface a dark, brownish hue, in pleasing contrast with the green lawns and foliage. When the application is first made, there is a slight odor, something like that of vinegar, but this lasts no more than a day or two.

Storage and Application

The city is building a 7,000-gallon wood tank into which the liquor is to be drawn by gravity from the digesters. Any excess over sprinkling requirements will be wasted by overflowing from the tank to the sewer. Two of the four digesters are to be connected at first, and when the truck sprinkler tank capacity has been increased, all four will be connected. These digesters discharge hot liquor every four hours, and not all in unison. Therefore, the liquor in the storage tank will be hot at all times, in which condition it permeates the road surface much better than when cold.

Besides the storage tank, the city's equipment includes one pump for pumping the liquor into the sprinkling tanks. This pump has a stainless steel impeller and an acid-resisting, bronze casing. The liquor is highly acid and will attack most materials used in construction, except acid - resisting bronze, rubber-covered steel, stainless steel, lead and wood.

So far, one truck sprinkler tank has been built, of wood, with bronze fittings. This has a capacity of 800 gallons and is demountable, so that it can be used on any one of the city trucks. Another tank will be added shortly. The total appropriation for storage tank, pumping equipment and one sprinkler tank amounted to only $1,700.

Costs by Assessment

It is felt, naturally, that the cost of operation of this dust-alleviating equipment should be borne by those benefiting directly. Therefore, a charge of 25 cents per lot fronting on the street is being made. This has brought requests for such service on the part of a considerable percentage of abutting property owners. However, in case of sections of street about to be oiled, there will be no charge for the liquor treatment, for the cost will be absorbed in the oiling cost. In other words, getting the street "liquored up" and "well oiled" are to count as one and the same thing with the City Fathers.

Freeways for California

Authority to construct local service roads paralleling state highways where traffic is so great that there is danger in permitting unrestricted entry upon main routes, has been granted the State Highway Department by the California State Legislature. Entry upon main highways from service roads paralleling them will be prohibited, except at points designated by state authorities.

Odorless Garbage Service

Lansing, Mich., Uses City-Owned Cans and Disposal by Digestion with Sewage Sludge

By THEODORE REED KENDALL
Engineering Editor,
THE AMERICAN CITY

GARBAGE Service is what the collection and disposal of garbage is termed in Lansing, and that is exactly what is given to the householders and other producers of garbage. The service begins with a separate contract between the city and each householder or business establishment, and ends with the pneumatic delivery of ground-up garbage to the digesters at the sewage-treatment plant.

The Contract and How It Works

The contract is the receipt for the rental of a garbage can, one of which is reproduced below. It will be noted that the householder is required to keep ashes, tin cans, iron, wood and other refuse out of the garbage can. All cans must be placed where they are readily accessible to the collectors, and must be free of excess water. On the receipt is a place where a quick record is made at the time of payment as to whether the renter has an earlier contract for other cans. Thus, if he has one or more cans and is signing a new contract for additional cans, the "Yes" square is checked. If, on the other hand, he is a new customer, the "No" square is checked.

At the time the receipt is delivered to the new customer, a copy of the Garbage Ordinance is given to him. This defines garbage in the first section. In the second, it limits the type of receptacle in which the garbage can be deposited for collection. The third further restricts the placing and type of container. Section four is a restatement of the definition of garbage contained on the receipt, and the fifth limits the collection of garbage to the city of Lansing and forbids

RECEIPT FOR RENTAL OF GARBAGE CAN 15000

Lansing, Mich., _____ 1939

Received $ _____ for rental of ( ) garbage can for the fiscal year ending April 30, 1940.

M _____

Residence _____

No service will be given if tins, ashes, paper, iron, wood or other refuse not classified as garbage is deposited in the garbage can. All cans must be placed on ground floor and drained of excess fluid.

CANS Yes ☐ No ☐

THE CITY OF LANSING
Department of Public Works, Garbage Service

By _____

M _____

( ) Wants Collection
( ) Wants Can.....Contract No.....
( ) Pick up Can

Remarks: _____

Department of Public Works
Garbage Service

Office Order № 11067

Date 193

Name
Old Address
New Address
By

☐ COLLECT CAN ( )
☐ PICK UP CAN ( )
☐ TRANSFER CAN ( )
☐ NEW CAN ( )
☐ CHANGE COVER ( )

Contract Number **Phone No.**
Work Done by **Driver**
Remarks:

Signed

The Office and Field Accounting Forms for Garbage Service in Lansing, Mich.

private collection. Section six provides that the superintendent shall be responsible for the collection for the city. Section seven provides that the cost of collection and disposal, except for the income from the rental of collection cans, shall be collected from general city taxes. It also requires the renter of the cans to be responsible for their loss or damage. The following sections set the penalties for failure to follow the requirements of the preceding sections.

As soon as a contract for a can is signed, an Office Order is made out in triplicate, and the first copy, on orange paper, is given to the driver of a neat aluminum painted Chevrolet pick-up truck which is used for special service. The driver immediately delivers the can, and in many instances it arrives before the householder returns from downtown. The delivery of the can is endorsed by the driver on the orange slip, which then goes to the driver of the route truck, who clips it on the dash of the truck until he makes the first collection at that address. Then he enters the householder in his Daily Ledger Book, which is arranged by blocks in the order in which he makes the collections each day. At the top of the page is the block and street name and number, and down the side the house numbers; in the next column in red crayon the number of cans, if more than one; and in the third column the number of the customer's receipt. The entries are spaced out so that there is room for additional entries during the fiscal year.

The same Office Order is used for changes of address when the householder is moving. He may ask the city to pick up the can at the old address and deliver another at the new address, or he may telephone to the office and say that he is taking the can along with him to the new address. The slip is made out with this information, and the orange slip goes to the first truck driver serving the old address. He will pick up the can and sign the orange original, then it will be passed on to the driver serving the new address, who will deliver a can there on his next trip and initial the order and return it to the office of the Assistant Superintendent of Garbage Service for filing. The second copy, on green paper, goes to the Assistant Superintendent, so that he may watch for the double signed original and be sure that the transfer has been made. The third copy, on brown paper, is retained at the City Hall office for reference.

The can rentals are due May 15 each year and in most cases are paid before that date. In that case the rate is $1.50 per can per year, but if not paid until after that date the rate is $2.00. During the earlier days of this system many householders mailed their checks for $1.50 to the Department after the rate had changed to the higher one. These checks were returned with a notice that they were late and that the rate was $2.00. This has greatly reduced the number of intentional or careless errors. If no payment is received on the date due, the service is carried on for two weeks, because with the rush of work in the office at that time, with so many customers making payments, the Department feels that the customer should have the benefit of the delay. If the payment is not made within four weeks after the date due, the can is picked up by route trucks. If garbage is thrown on the ground or is not kept in city cans, it becomes a health menace and is reported to the Health Department.

In order to help the householder to remember that he has a rental due, a notice of that fact is mailed to each customer. These are sent in April, and many pay at once, so that the rush is not quite so great.

Collection Methods and Frequency

In the residential district where each householder has one can, the collections are made once a week except during July, August and September, where there are two collections weekly. Hotels, restaurants, produce markets and apartment houses with three or more cans in the downtown area have daily collection, while in the outlying area the collection from multiple can holders is made three times weekly. All city departments are required to pay the regular fees for this service.

There are five Duplex trucks in the collection service in winter, supplemented by four additional trucks in summer. A spare truck is kept for winter service, and one pick-up truck in service the year round. In making the rounds, these trucks pick up 200 cans on each load, and make three loads a day. To load requires traveling about ½-mile, and then there is a 3-mile haul to the sewage-treatment plant, where the cans are emptied. The plant is within city limits.

The trucks are loaded with the clean cans, stacked at the back of the truck and nested so as to take up the minimum of space. As the truck drives up the street with its driver and two collectors, the cans from the houses, with their contents whether full or not, are handed up to the driver, who stacks the full cans and empties the partially filled cans to fill other cans, and nests the dirty empty cans along the sides of the stake body. A clean, sterilized can is always left, and the full and partially filled cans are taken out to the truck. The covers for the cans are not brought out to the trucks when a collection is made, but are left at the houses. The men collecting the cans are equipped with a black Sam Brown belt with a heavy leather pad at the hip to make the carrying of loaded cans easier and prevent strains.

A day's work for a truck and its crew is the collection of 600 cans, or a number close to that figure, which has been determined by the length of the route. When that is done, the crew is through for the day, provided that the work has been done satisfactorily. If continual complaints should be received from householders on a route, it would be chalked up against the crew and they would be reprimanded. Fortunately, the men are of unusual caliber and are paid a higher wage than is usual for this service, and complaints are few. Customers' complaints are recorded on Office Orders and sent out to the trucks. The driver and the collectors are required to sign the order to indicate that it has been taken care of, and also state why there was any reason for a complaint. They are sometimes slightly humorous, such as "Can in weeds" or "Can locked up." Similarly, the collectors are entitled to make complaints for infringements of the Garbage Ordi-

nance by householders, and they send the complaints to the office for checking. If a can contains crockery and tin cans, a complaint is made by the collectors, and the can is set aside for the Assistant Superintendent to see. Either he personally, or the complaint truck, the little aluminum unit, goes out, and the situation is diplomatically explained. The collectors are instructed never under any conditions to argue with customers.

The Cans and Truck Bodies

The galvanized iron cans, of 9 gallons capacity and with two handles, are purchased by contract, in lots of 3,000 cans, after bids have been taken. It is essential that all the cans be of exactly the same size to permit their rapid cleaning by machine at the point of disposal of the garbage. The cans are corrugated on both sides and bottom, and are hot-galvanized after forming. The cover fits loosely on the top, so that it will still fit if the can gets slightly out of true shape. The cans are all die-stamped "City of Lansing" and the drivers have orders to pick up any can with this stamp found at an address where there is no collection, and make a record and report.

The trucks all have ½-inch sheet-metal flat-bed bodies with metal stake sides which are removable, so that the loading may be done with

THE PICTURE STORY OF GARBAGE COLLECTION AND DISPOSAL IN LANSING, MICH.

1. One of the collection trucks, with a collector handing up a can to the driver to stack. 2. The new and old cans. The cover would not fit the old uncorrugated can which was battered out of shape. 3. The aluminum painted Chevrolet complaint truck arriving at the yard for another batch of "tickets." 4. Loaded cans stacked at the receiving platform of the disposal plant. The instrument boards of the two Jeffrey grinders are seen over the top of the cans. 5. The inverted stacks of washed, sterilized cans at the exit end of the disposal building. 6. One of the washers toward the close of the day. 7. The new and old washers after cleaning up all cans and showing the chain conveyor which carries the cans through the washer

the greatest facility. Four long, fine chains are carried by each truck, one for each interchangeable stake section, so that the nests of cans may be chained in place and not rattle around or tip over. There is the minimum of spilling of garbage in this collection system. The small amount that may spill is invariably on the truck floor when the cans are being stacked, and the orders are that no can shall ever be emptied while on the ground.

In addition to the trucks listed above, there is one small Duplex truck with a narrow body for work in alleys to serve stores and restaurants. It is usually referred to as the "restaurant truck" by the men in the Department.

The cans are all delivered by the trucks to a special building built in connection with the sewage-treatment plant. Here they are emptied into a garbage grinder, and the shredded garbage is delivered to the digesters of the sewage plant. The cans are washed thoroughly, cooled and stacked for the trucks to take out again. The collectors help unload the nests of cans at the platform at truck-bed elevation, and also are responsible for the washing and greasing of the trucks at the city yard. The drivers also assist in the unloading of the cans and act as foremen of the collection unit.

The cans are rolled in nests off the trucks onto the platform, where four men take them and empty the contents onto the floor in front of the grinders and rake the garbage over for large bones, glass and tin cans, which are removed and not put into the grinders. The empty cans are then placed upside down on a conveyor chain a little above waist height and carried to the washing machine. This machine handles 36,000 cans a week with no trouble. The disposal system is in duplicate, with two grinders, two washers and two compressors for the operation of the pneumatic ejectors for the ground garbage, so that there will be no shut-down in case one unit needs repairs.

The water for washing the cans is recirculated for each run of the machine. A run consists of the time it takes to wash the cans delivered by the fleet of collection trucks from one route each. Thus the water is changed three times daily. The water is recirculated to the washers by three old and three new Union Steam Pump Co. centrifugal pumps of 600 gpm capacity each, all driven by Howell motors. The water is maintained at a temperature of 185 degrees F. in the washers by live steam admitted to the tanks beneath the washer lines and from which the pumps take their suction. The steam is furnished by a Wickes tubular boiler in the sewage-works boiler room and is run by sewage-sludge digester gas with a quick make-up unit composed of a Detroit coal Roto Stoker which kicks in and builds up the fire when there is a particular demand for steam by the washers. This occurs when the washer is started up after cleaning. The reason given for the use of the coal stoker instead of an additional gas burner is that the use of a bed of coal as a pilot flame is safer than a standard pilot of gas which might go out if the pressure dropped in the large gas storage tank in the plant.

As the cans are carried into the sheet metal tunnel for washing, they are first subjected to a powerful stream of water inside the can to wash out any loose material, which drops outside the tunnel into a wire basket. Then as they continue through the three sections, they are washed by jets on the sides, the top and inside. At the end they are cooled by a jet of cold water to permit the two stackers at the end to handle them easily. The cans are nested upside down so that they will drain, and are placed near the edge of the platform for the drivers and collectors to take the required number. The jets of water are formed by standard caps on the end of the 1½-inch pipe carrying the hot water and with a cross cut in them. This gives a particularly effective cleansing spray. The temperature of the water in the tanks is controlled by thermostats.

A screen beneath each spray catches the garbage that is washed down, and a round screen over the end of each pump suction in the tanks prevents the impellers from being fouled. The screens are removed and washed three times daily when the trucks have made their routes.

The pump motors are 7½-hp each and the conveyor motor is only one horsepower, and this is larger than is really necessary. The water used for washing the inside of the cans is recirculated, while the water for the outside and bottom is fresh water which makes its way into the recirculation system.

Grinding the Garbage

The two grinders are installed beneath the floor and are fed from the platform by pushing the garbage into the feeding hoppers with rakes. The motors for the two Jeffrey grinders are each 25-hp General Electric units. A red signal light shows up on the control board over a grinder when the pressure tank below the grinder is full. Then the operator shuts off the water to the grinder and opens the discharge valve of the pressure tank and applies the air pressure to discharge the garbage to the digestion tank, in which the garbage is digested with the raw and activated sludge from the treatment plant.

The delivery of the shredded garbage direct to the digesters has greatly increased the production of gas at the plant. The normal production is 100,000 cubic feet per day when there is no garbage delivered to the system, and it runs up to 230,000 cubic feet daily when the usual amount of garbage is delivered. By keeping the garbage out of the flow of sewage, the suspended solids in the liquid sewage are kept down, thus not increasing the load on the treatment process.

The city had 14,994 cans in service during August, 1939, in the hands of 13,912 customers. The revenue from the renting of cans in 1938 was approximately $23,000. The expenditures during 1938 were about $60,000 for operation of the collection and disposal system, $49,580 for wages for the men, and $8,000 for new cans.

The pay rate for drivers and collectors is $35 per week on a daily basis. If the men take a day off for their own use, they are not paid for that time. The summer extra truck men are paid $32 a week for the temporary work.

The Garbage Service is operated under a five-man committee of the City Council in the Department of Public Works. J. C. Brandemore is Superintendent of Public Works, and H. P. Richardson is Assistant Superintendent in charge of the operation of the Garbage Service.

New Water-Softening Plant Operated Automatically

Lime Softening by Precipitator Method with Recarbonation and Filtration at Elkhorn, Wis.

THE new lime softening plant at Elkhorn was placed in operation during the last week of July, 1939. Its automatic operation shows what can be done with the minimum of technical attention after the first adjustments are made. Practically every operation is controlled automatically from the starting of the plant—bleeding of lime sludge, filtering, washing, and shutting off when the demand of the city no longer requires its operation. Booster pumps in the old pump station are started by a 5-foot drop in the standpipe, while the filter plant operation is controlled by the drop in the clear well at the plant. In addition to the 27,000-gallon clear well, there are three concrete reservoirs for filtered water, all in series, with a total capacity of 237,000 gallons.

Source of Supply

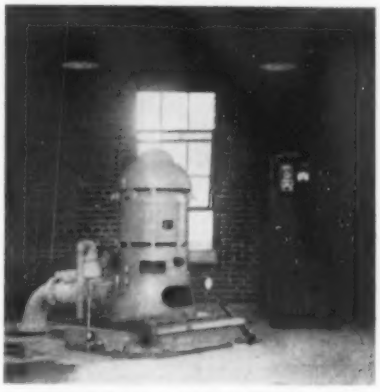
The supply of Elkhorn is drawn from two 1,650-foot wells. The 12-inch well which delivers 700 gpm is pumped by a Peerless deep-well turbine, while the second, a 10-inch well, is pumped at 450 gpm by a Byron Jackson deep-well pump. Although the iron in the well water is low, only 0.45 ppm, there was considerable trouble with Crenothrix iron bacteria growths in the mains due to the character of the water, so the lime softening plant was installed and now supplies a soft palatable water for the city.

The New Building

The new water-softening plant is located immediately behind the old pumping station and is 55 x 37 feet in plan, three stories high. It is built of concrete and brick and is as compact as careful design could possibly make it. The pipe gallery is located on the first floor at the entrance to the structure. On the second floor are the filters and the Precipitator, and a half-story higher is the aerator. Above the filter floor is the chemical storage floor.

Aeration

The well pumps deliver the water direct to the aerator in the tower at the end of the building. Here the hydrogen sulphide is effectively removed and the carbon dioxide of the well water reduced from 45 ppm to 18 to 24 ppm. The water comes up in a central flume and flows over the iron weirs at the top and then down over sloping side plates with holes ¾-inch in diameter to second and third weirs. To increase the effectiveness of aeration, a special Filtered-Aire blower, made by the American Foundry & Furnace Co., delivers 1,400 cubic feet of air per minute under the aerator, and the air is vented through two louvres in the roof.



Peerless 700-gpm Turbine Pump on the 12-Inch Well at Elkhorn

The Spaulding Precipitator

The aerated water flows directly to the Spaulding Precipitator, the agitator of which is driven by a Louis Allis 4-speed motor. The Precipitator is 20 feet square, and a portion of it is located under the aerator, thus saving space in the building. The agitator is normally operated at 1½ rpm, and a sludge blanket 60 inches thick is maintained as the most effective for this installation. The flow through the Precipitator, installed by the Permutit Co., is vertically upward through the sludge blanket, which aids in removing excess hardness and leaves a clear effluent flowing over the surface weirs.

The lime sludge is removed con-

(Continued on page 73)

The New Automatic Water-Softening Plant at Elkhorn, as Seen from the Sludge Basin

tinuously during the operation of the plant, flowing by gravity to a pair of sand sludge beds which are underdrained. These beds are 35 x 26 feet each and are cleaned as required, the sludge being disposed of on a local dump.

Chemical Treatment

Two chemical dry feed machines furnished by Permutit are used to measure the alum and lime as required by the operation of the plant. They are controlled by the flow from the well pumps, which are automatically shut off when the city demand is satisfied. The feeders are reciprocating and adjustable for varying rates. The dosage used at Elkhorn is 0.163 pounds of alum per 1,000 gallons, and 4 pounds of lime per 1,000 gallons.

The chemical storage floor above the filter floor contains the hoppers for supplying the alum and lime to the feeders. General Chemical Co. aluminum sulphate and Marblehead lime are being used. On the chemical storage floor there is a 1,000-pound Wright electric hoist on a monorail which is extended out over the unloading platform on the ground floor.

Filters and Recarbonation

As the water leaves the Precipitator, it flows to the recarbonation chamber adjacent to the filters, where a lateral system at the bottom of the basin delivers the carbon dioxide gas to the softened water. From this basin the water flows directly to the two 14 x 15-foot filters, which are completely automatically operated by Permutit timing switches and valves.

The filters contain 28 inches of sand over 14 inches of gravel around the lateral system, and there is 22 inches of freeboard from the top of the sand to the top of the two wash-water troughs in each filter. The filter runs are set for 24 hours at this plant, for that has been found to be the most expedient operating cycle. This length of run is set on the electric time clock, and a pin sets the mechanism in operation for washing. First the influent and effluent valves are closed, and then the wash-water outlet is opened and the mechanism stops in its manipulation of the various operations until the wash-water valve is fully open. Then it starts to build up pressure behind the wash-water inlet valve, which takes about two minutes; then the wash-water pump is started, and when the pressure is correct, the valve opens and the filter is washed for eight minutes at 2,700-gpm. As soon as the wash-water valve has opened, the wash timer is started simultaneously with the starting of the wash-water pump. When the eight minutes is up, the timer stops and returns the control to the main control unit. This immediately shuts the wash inlet valve and opens the waste valve for "re-wash" to settle the bed for five minutes, this being controlled by the second timer, which also returns control to the main unit when the re-wash period is over.

On the marble-top control tables are mounted loss-of-head and rate-of-flow gages for the filters for checking operation and the possible need of changing the timing of the various operations. A signal panel on the table shows the setting of the five valves for each filter—red lights for valves that are open and white lights for those that are closed.

Adjacent to the tables is a clear-well depth gage, and on the wall is a Republic Flow Meter indicating and recording gage for the delivery of water by the well pumps to the aerator. A laboratory table on the filter floor enables the operator to check the results of each of the steps in softening the water.

Pipe Gallery and Other Equipment

The pipe gallery on the ground floor has two windows and a glass-paneled double door which supplies ample light during the day, and five enamel reflector lights provide light at night. An oil burner furnace runs continuously and provides the CO_2 for the recarbonation. The flue gases run 10 to 12 per cent CO_2, as indicated by a Permutit indicating and recording gage on the wall. The same oil burner is used in winter to heat the building, with four radiators on the ground floor and five on the second floor.

A Nash Hytor pump with a 5-hp Marble Card motor pulls the hot flue gases through the scrubber or separator, and delivers them direct to the recarbonation basin with a shunt line to the Ranarex CO_2 indicating gage. On the ground floor in the pipe gallery also is the 2,700-gpm Fairbanks-Morse wash-water pump, driven by a 40-hp F-M motor. On the wall is a Republic Flow Meter indicating gage showing the exact rate of delivery of the wash-water pump. Mounted close to the back wall of the filter gallery is a small Worthington compressor which furnishes the air for the controls of the Simplex rate-of-flow units.

A 50-gpm pump is installed to decant the clear water from the wash-water reclaiming basin of 30,000 gallons capacity, and delivers it to the Precipitator. This reclaiming basin is adjacent to the 27,000-gallon clear well beneath the pipe gallery. At the right of the pipe gallery is the switchboard containing the speed control for the Precipitator, a time switch for the maximum demand at the plant, which is timed to be out of step with the demands of householders, thus keeping the cost of electricity to the city at a low rate. The board also has the relay pressure control on the wash-water inlet line, holding the pump out of service until the pressure has been built up.

Pumping and Storage

In the old pumping station next the new softening plant are two high-service 340-gpm electric-driven F-M pumps and motors, and a standby single cylinder F-M 50-hp semi-diesel engine belted to a 600-gpm F-M centrifugal pump. The average pressure in the city is 55 pounds, maintained by the 150,000-gallon elevated tank adjacent to the Walworth County Court-House.

Results at the New Plant

This new plant, which has a capacity of 700 gpm, serves a population of 2,340 in the city of Elkhorn, Wis. The hardness of the well water is 308 ppm, which is reduced to 70 ppm by the automatically controlled softening plant. The pH of the well water is 7.2,

(*Concluded on page 73*)

New Transit for Seattle

THE city of Seattle, Wash., owning its local transportation system and electric power supply, is in a particularly favorable position to find out what can be done to provide an adequate transit system—and then to do it. During the last three years, several efforts have been made toward rehabilitating the existing system or replacing it completely with motor coaches. The two obstacles to arriving at a clear-cut decision were (1) what to do about certain debts against the System, and (2) the lack of impartial competent information on what kind of system to develop. The first question was answered by the Reconstruction Finance Corporation's offer of a loan of $10,200,000, of which $4,500,000 was to be used to settle the debt. The second question has been answered by a comprehensive study and report by The Beeler Organization, New York.

COURTESY OF GENERAL ELECTRIC COMPANY

Seattle, Wash., goes trolley coach with 235 of this type, and expects financial results as given below

337 New Vehicles

The availability of ample hydro-electric power, city-owned, at 0.8-cent per kwh, the hilly topography of the city, and the excellent two-years performance of the 120 trolley coaches of the nearby Portland, Ore., transit system, convinced the engineers and persuaded the city of Seattle that modern electric transportation should be the backbone of the new transit system, with motor-coach lines constituting the vertebrae.

The plan calls for the scrapping of the present 200 miles of obsolete trolley-car service and the installation of 235 trolley coaches estimated to cost $2,820,000 and 102 motor coaches costing $1,146,000, the construction of 110 miles of trolley coach overhead lines for $1,000,000, shop equipment worth $50,000, fare-collection equipment worth $75,000, and other construction and equipment bringing the total estimated expenditure to $5,700,000, furnished by the Reconstruction Finance Corporation.

Transit conditions in Seattle have been the conditions familiar in most big cities where a clean-cut decision on what to do had not been taken and acted on. When all was said and done at the end of a year, revenues from the 300 aged street cars operating on 199 miles of track had exceeded *operating* costs by $51,000, and the 50-year-old cable cars, 20 of them on 8.3 miles of cable track, showed an *operating* loss of $87,000. Such results are discouraging not only to administration officials and the public—especially the riding public—but to the officials who operate the transit system as well. Here was a major public utility, amply patronized, losing large sums of money because it had ceased to be a going concern. The Seattle municipal transit system now expects to go places again as shown by the figures below.

Three types of modern vehicles were available—the motor coach, the electric trolley coach, and the Transit Presidents' Conference Committee electric rail car. The P. C. C. car would seat a third more passengers than a 40-passenger coach, thus necessitating fewer vehicles and less frequent service, but the P. C. C. car costs more than a trolley coach, and the rail and line construction costs are several times as large. The first cost of the gasoline bus is less than that of the trolley coach, but the operating cost is more, in Seattle at least. The trolley coach has a longer life than the gasoline bus, but against this there is the cost of constructing an overhead line for the trolley coach. In view of the vast municipal sources of electricity and the steep grades in the city, the decision went to trolley coaches for the major service, with motor coaches on the lighter traffic routes.

Orders were placed on November 1 for 337 vehicles for $3,772,710, as follows:

100 Brill trolley coaches of Pacific Car & Foundry Co. with General

	Actual for 1938 per Annual Report	Estimated for 1942 Second Year Under Beeler Plan
Gross revenue	$4,354,066	$4,993,921
Operating expense	3,969,338	3,176,915
Balance after operating expense	$ 384,728	$1,817,006
Depreciation	702,526	646,000
Balance after oper. exp. & depreciation	—$ 317,798 D	+$1,171,006
Interest and other deductions	578,643 *	445,500
Balance after operating expense, depreciation, interest, and other deductions	—$ 896,441 D	+$ 725,506
Average daily balance	—$ 2,456 D	+$ 1,988

D Deficit.

* Excludes interest on General Lien Ry. Bonds payable from general tax revenues.

Electric motors, and 135 Twins with Westinghouse motors, at $11,457.

30-passenger motor coaches, as follows: 34 Twins at $8,383; 25 Kenworths at $8,782, and 5 with fluid transmission at $9,292.

41-passenger General Motors coaches: 25 with diesel-hydraulic drive at $12,770, and 13 with gas-hydraulic drive at $11,750.

Important as are the elements of comfort and safety in attracting patronage, the element of traveling time determines the success of a modern transit system. The schedule planned for the new system foresees 20 per cent time saving on all lines except those already served by modern motor coaches. A fourth most welcome element of the new system will be quiet. It is expected that this one element will enhance real-estate values in the business district. Present travel on every route in this city has been analyzed, and a new flexible schedule planned to provide better service than now.

Mud Trouble Cured by Paved Playgrounds

ONE OF the minor problems coming before a board of education is the care of areas used for playgrounds at the various school buildings. The problem is not an acute one in rural sections, since the grounds are large and the number of pupils to be accommodated is comparatively small. Sod is generally the most satisfactory surface under those conditions.

In the cities and larger villages sod usually disappears under the pounding of young feet. Mud follows, and the next step in many cases is to add cinders or gravel to take care of the mud. Dust and loose particles on the surface are a source of further trouble.

Such was the condition of some of the school yards in the city of Hartford, Conn. The Board decided to surface the yards with a pavement which would cure the mud trouble, would be dustless, and still not hard enough to injure the youngsters when they fall. They selected for the surface a special type of Tarvia-lithic.

The first step was to remove the old surface to a depth of 4 to 6 inches. Upon this, broken stone ¾- to 1½-inch was spread and thoroughly rolled, the voids being filled with stone screenings during the rolling. A macadam foundation approximately 4 inches thick was obtained. The surface of this foundation was treated with ½-gallon of cold refined tar (Tarvia B) per square yard, which was permitted to soak into the surface for at least two weeks before the top was placed over it.

The top or wearing surface consisted of two layers of tar-coated stone, each spread by hand and rolled in place. The bottom or binder course was built of ¾-inch tar-coated stone meeting the following requirements:

Tar binder	3.5	to	4.5%
Mineral aggregate	95.5	to	96.5%
Grading of mineral aggregate:			
Passing ⅜" screen	0.0	to	15.0%
Passing ½" screen	0.0	to	40.0%
Passing 1" screen	85.0	to	100.0%
Passing 1¼" screen			100.0%

This material was spread over the prepared foundation to a depth of approximately 1½ inches and rolled.

The surface or wearing course was

Hartford, Conn., school playground getting ready for fun as a Buffalo-Springfield roller smooths the Tarvia-lithic that takes the dust and mud out of play

built of a special grade of tar-coated stone as follows:

Tar binder	8.0	to	10.0%
Mineral aggregate	90.0	to	92.0%
Grading of mineral aggregate:			
Passing No. 200 sieve	0	to	10.0%
Passing No. 10 sieve	60.0	to	95.0%
Passing ¼" screen	95.0	to	100.0%
Passing ⅜ screen			100.0%

This mix was spread over the consolidated binder course to a depth of one inch and rolled true and even.

The mixed material was hauled by truck from the producing plant of The Barrett Co. at Rocky Hill, Conn., a haul of approximately 20 miles. The material was handled without additional heating on the job.

The work was finished by spreading over the surface ½-pound of cement per square yard. This was swept into the surface voids with a hair broom.

The resulting playground surface is dustless, and mud-proof, and is very satisfactory as a play area. Running lanes and diagrams for various sports have been painted on the surface with white traffic paint.

This work in Hartford was a cooperative project with the WPA. The construction has been under the general direction of Edward Nelson, Business Manager, and Edward Willard, Engineer, for the Hartford Board of Education.

GEORGE E. MARTIN,
Consulting Engineer,
The Barrett Co., New York.

Grim Humor from a British Zoo

FROM LOCAL GOVERNMENT SERVICE, LONDON

Rising to the Emergency—A. R. P. at the Zoo

Raton Municipal Light Plant, Athletic Field and Swimming Pool

Lowest Electric Rates in New Mexico

By T. R. KIRBY
General Manager,
The Raton Public Service Co.,
The City Water Works,
Raton, N. Mex.

HOT-WATER heating costs the citizens of Raton less than one cent ($0.009) per kwh. Our electric rates are the lowest in this state.

Electricity for coffee urns, etc., costs 3 cents per kwh for the first 500, and thereafter 2 cents.

Residential lighting and cooking cost 8 cents per kwh for the first 25, 3 cents for the next 75, and 2 cents thereafter. The minimum bills are $1 for 12 kwh, and $2 where there is a range or water heater. Where fluorescent lighting is used, a capacitor must be installed.

Commercial lighting costs 8 cents for the first 100, with a cent decrease for each additional 100, and 3 cents per kwh after 500 kwh. The rate for electric sign boards is 5 cents per kwh, minimum charge $3.

Commercial power costs 4 cents per kwh for the first 500, 3 cents for the next 1,000, and 2 cents after 1,500 kwh. The minimum charge is $1 per month per customer.

A discount of 10 per cent applies on all rates and minimum bills.

New services must be approved cable or in conduit, with an approved sequence-of-metering cabinet. In the case of water heating, the municipal company specifies the size of the unit, furnishes a time control and determines the hours when the heater may be operated.

The electric plant cost $65,000 in 1919. In 1927 a new plant was constructed and equipped with two 750-kw General Electric turbines. By 1937, increased load required additional steam capacity. A Union Iron Works boiler—425 pounds pressure, 750 degrees temperature—was installed at a cost of $70,000, paid out of earnings. This boiler cut our fuel costs 30 per cent. During the next 12 months we plan to install a new turbine, probably 1,500-kw, and this $60,000 will be paid from a replacement fund now having sufficient funds. The plant is valued at $445,697.

Revenue for the year ending June 30, 1939, totaled $143,877. Operating expenses, including general and administrative $45,902 and depreciation $23,070, totaled $68,972. The net operating income was $63,351. A cash appropriation of $19,350 was made to the city; service worth $15,249 was supplied for street lights, buildings and swimming pool. Millions of kilowatt-hours generated have increased annually as follows: 2.74 in 1935-36; 3.13 in 1936-37; 3.43 in 1937-38; and 3.79 in 1938-39.

Four years ago the first 50 kwh cost the residential customer $4.95. Now, after two rate reductions, 162 kwh can be had for $4.94. Statements are mailed monthly on postcard, using Addressograph and billing machine.

The Raton Public Service Co. was incorporated under the laws of the state of New Mexico on April 22, 1919, when the city purchased the system. The status removes the plant from the direct jurisdiction of an ever-changing City Council. The Council appoints a four-member Board of Public Works. The members are appointed from the city at large for a four-year term, one member's term expiring each year, and the vacancy filled by appointment by the City Council.

The Board of Public Works in turn appoints a citizen to act as President of The Raton Public Service Co., whose governing body consists of five members, including the Mayor and a councilman, who act as a board of directors for the light plant. The City Water Works is under the Board of Public Works.

City water comes from springs and a 10-000-acre watershed. The filtration plant is located 10 miles from the city at the storage lake of 1,227 acre-feet capacity. It uses sand filters, coagulation with alum, and the application of chlorine. The water is free from fluorine. All services are metered, and the bills are quarterly. The investment amounts to $621,898; bonded debt $96,000, paid off $16,000 per year.

The personnel of the Board of Public Works which directs the City Water Works is as follows: H. G. Frankenburger, President; A. J. Lambert, Vice-President; F. A. Young, Director; C. H. Humphreys, Director; T. R. Kirby, General Manager; C. C. Riddell, Superintendent Distribution; Mrs. A. E. Dorman, Secretary.

The personnel of The Raton Public Service Co. is: W. E. Nutting, President; R. P. Kress, Mayor and Vice-President; E. G. Kilmurray, H. R. Foster, J. J. Evans, T. R. Kirby, Mrs. A. E. Dorman.

Modern Primary Sewage-Treatment Plant at Davenport Operates All Equipment with

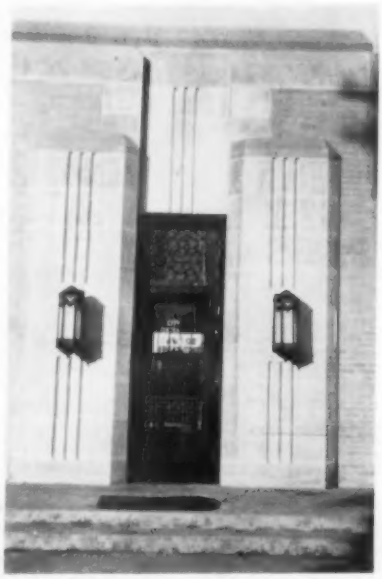
Power from Sewage Sludge Gas—An Economy Measure

WITH all electric power used at the primary sewage-treatment plant serving Davenport, Iowa (population 60,751), furnished by a gas engine operated with gas from the sewage-sludge digesters, and another similar engine driving the main low-lift pump which raises the sewage 20 feet to the plant, the city operates its plant with maximum economy. The plant was started in September, 1938, using city gas for the first sixty days to heat the digesters, etc., but since then the production of gas in the digesters has averaged 65,000 cubic feet daily, more than ample for the services using the gas for heat and power in the plant, so that a considerable portion of the gas is wasted by burning in the open.

Sewage Pumping

The sewage flows to the plant by gravity except for the portion originating in Bettendorf to the northeast, which is pumped into the Davenport sewers, and a small lift station at East 29th Street in the city, where the sewage is lifted over a hill into the main sewers. The system is a combined one, but a definite program is under consideration to eliminate the storm water from the sewers and thereby reduce the load on the plant in times of storm. The flow at the plant varies at present from 4 to 15 mgd, between domestic flow and maximum storm flow. An overflow in the receiving well at the plant permits all flows over 15 mgd to go direct to the Mississippi River.

At the influent well in the main control building two Chicago comminutors and a hand-cleaned bar screen with 1⅛-inch spacing of the bars are installed. Normally the comminutors are used alternated at 5-minute intervals by Paragon automatic time clocks on the control board, but during the greater part



Entrance to the Main Control Building of the Davenport, Iowa, Sewage-Treatment Plant

of August, 1939, the hand-raked screen was used because of the loss of a chamois bag containing some $3,000 in jewelry and there was a $300 reward to the finder. The heavy flow of storm water was expected to flush the bag through the sewers to the plant within a few weeks. The flow to the comminutors or to the bar screen is controlled by aluminum gates set in grooves and with a watertight fit, so that the channel cut-off was dry and not filled with septic sewage as is the case in many plants. In fact, at this plant the absence of the usual leaky valves and connections was very noticeable and greatly improved the appearance and cleanliness of the plant.

The well in which the comminutors and the screen are located is equipped with a high water alarm so that if for any reason the screen or the comminutors fail to permit the flow of sewage through in the proper quantities and it starts to flood over the floor, the operators are notified at once. Two vertical-shaft centrifugal pumps are installed in a dry well adjacent to the screen and comminutor room and are used only as standby pumps. They are 3,000 and 6,000 gpm capacity with 30- and 60-hp motors, both pumps and motors being furnished by Fairbanks-Morse. The main pumping unit is a 4- to 12-mgd F-M horizontal-shaft centrifugal pump driven at variable speeds by a Climax Blue Streak 6-cylinder, 75-hp sewage-sludge gas engine with an automatic control through the governor on the gas engine. A Chapman solenoid-controlled check-valve on the large pump, and Crane check-valves on the other two pumps, provide against reversal of flow when any one pump is not in operation.

The discharge line of the pumps is a 24-inch cast iron pipe which is carried outside the building and around to the far side, where a Builder's Iron Foundry venturi meter is installed, with the recording dial in the Superintendent's office. The sewage then flows directly to the grit chamber.

Grit Chamber and Settling Tanks

There are two grit chambers used in parallel giving a 1½-foot-per-second flow at normal rates. The chambers are cleaned separately by Chain Belt Rex grit removers, which deliver to a common receiver equipped with a screw which moves the material to the end, where it is washed and then delivered to a hopper below for final removal by truck.

The flow then continues across the back of the control building and into three settling tanks, each equipped with two Jeffrey sludge scrapers which move the sludge toward the control building and into end hoppers, along which cross

conveyors in each tank move the sludge to the collection hoppers, from which it is pumped to the digesters. The detention time in the settling tanks is 3½ hours at the 4-mgd rate and only 1½ hours when the full 15 mgd is flowing through the plant. The sewage flows over well-set steel plate weirs at the end of the settling tanks to the sewer outfall in the river.

Sludge Handling and Valves

In the basement of the main control building are two Chicago Scru-Peller sludge pumps with 7½-hp Westinghouse motors and with two Builders Iron Foundry venturi meters on the sludge discharge. In order to control the flow of sludge to these pumps, a well-planned and easily operated system of quick-acting 6-inch Crane valves has been installed. There are two of these valves on each of the three lines from the settling tanks, so that either pump may handle the sludge from any one of the tanks, and also similar 6-inch valves from each of the digesters leading to the pumps. The pipes throughout the plant are all well labeled so that a new operator may know as well as an old experienced one just what the function of each and every pipe may be. They are all painted aluminum in color and stenciled in black clearly, "Digester No. 1 Raw Sludge," so that there is no opportunity for misunderstanding.

The Digester Heating Water

A boiler room on a mezzanine floor between the first basement and the pump room in the main building contains the Crane heater for water for domestic use, using sludge gas for fuel and an American Gas Products Co. hot-water heater for the digester water and to heat the building in winter. This also uses sludge gas. A PFT flame trap and a Pittsburgh Equitable Meter Co. pressure regulator are installed to control the gas supplied to these two boilers. The digester water heater is automatically controlled, because it is not the main source of heat for the water, and cuts in only when other sources fail to supply sufficient heat.

The cooling water from the jackets of the two Blue Streak sludge-gas engines is used as the primary source of hot water for the digesters. If this water is too hot, a manually controlled valve is opened, sending some of the water to a 320-foot coil of 3-inch wrought iron pipe set in the settling tanks about 3 feet from the bottom, where it will not interfere with the operation of the scraper mechanism. At the same time an automatic control is set in operation whenever the digester water gets too hot, and city water is admitted to reduce the temperature of the water to between 105 and 120 degrees F.

The digester heating water is circulated by a pair of 1-inch Fairbanks-Morse centrifugals driven by 3-hp G-E motors.

The Digesters

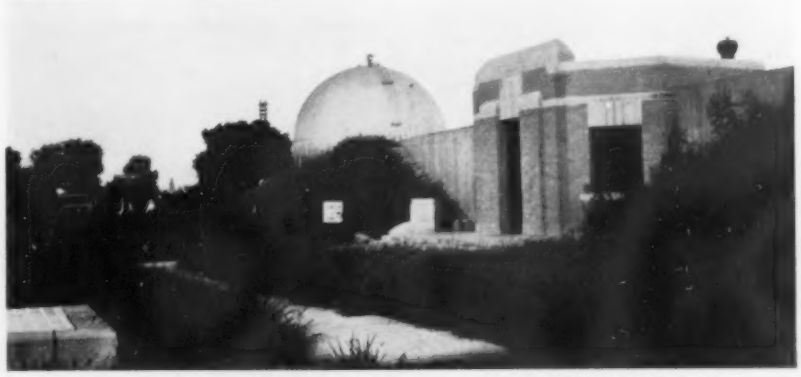
A tunnel leading from the basement of the main control building carries the various pipes for the digesters, of which there are two at the present time, with provision for installing two more in the same group at the end of the tunnel. Sludge is pumped alternately to the two digesters by the pumps in the basement of the main building, but there is a remote control for these pumps in the digester control room between the two digesters and below ground level, protected from storms summer or winter.

The digester control room contains also a diaphragm pressure regulator for the gas coming from the gas sphere, where the gas is maintained at a pressure of 50 pounds by an automatic switch which cuts in a G-E 7½-hp motor driving a Worthington gas pump through a V-belt. This starts when the pressure drops to 40 pounds, and shuts off at 50 pounds. The control valve on the line from the sphere reduces the pressure of the gas for use in the building and the engines to 4 inches of water. A PFT waste-gas pressure relief flame trap is installed on the waste-gas line, so that if the pressure in the line to the heaters and engines drops below 3 inches of water the waste burner line is shut off immediately, and when the pressure is above 4 inches the valve is opened wider wasting more gas. A continuous pilot light on the waste-gas burner prevents any possibility of trouble through failure of the gas to be ignited at the waste-gas burner.

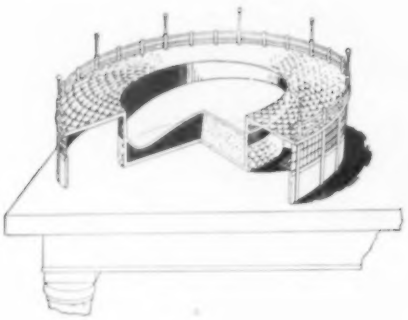
The digesters are 55 feet in diameter and 23 feet at water level in the center. They are equipped with Downes-PFT floating covers and gas collectors. A tip bucket meter was installed on the supernatant liquor line to measure the amount of the liquor which was forced out by the pumping, but this is not used and the amount is measured by the drop in elevation of the liquid level when there is no pumping. The liquor is drained direct from the digesters to the settling tanks. An Ashcroft gage on each of the digesters shows the liquid level inside the tank.

There are two meters installed in the main control building to indicate the amount of digester gas used and the amount wasted. These are Roots Connersville units, connected to the main lines from the storage sphere. The gas sphere, built by Pittsburgh-Des Moines, has a capacity of 58,000 cubic feet of gas at 50 pounds pressure. The pro-

(*Concluded on page 73*)



The Digester Control Building and the Spherical Gas Holder



Why Wellsboro Built a Straw-Hat Swimming Pool

By J. R. Crosetto
City Engineer, Wellsboro, Pa.

TO THE east of the business section of Wellsboro is a wooded park with winding walks and drives leading to a hill which gives a view of the village. In this park, with the aid of Wesley Bintz, consulting engineer, of Lansing, Mich., we built a swimming pool as the start of a recreational center.

This design provides an ovoid or egg-shaped pool 60 x 90 feet and placed like an inverted straw hat. The crown represents the pool wall and pool floor, and the brim the concourse floor around the pool. This floor also forms the ceiling of the bath-house around the pool, one side being the pool wall. It is then only necessary to build the outside curtain wall and floor to have the bath-house.

We find the advantages of the Bintz pool, as compared with the conventional sunken pool and bath-house, to be:

1. Costs from 25 to 40 per cent less.
2. No excavation required on level ground, except for footings.
3. No fence needed.
4. Sewer 8 feet shallower, allowing access to shallow outfalls.
5. Less land by one-third, allowing space for other recreational activities and on hilly ground a smaller area to level off in preparation for building.
6. It is built up from the ground and away from damaging water and frost action.
7. Pool and bath-house being all concrete construction, the maintenance costs are reduced to a minimum.
8. By compact and convenient arrangement, lower operating costs and better control of bathers and the many spectators at the pool.
9. Because the pool wall becomes one side of the bath-house around the pool, all inlet pipes, outlet pipes, drains, and underwater lights can be immediately serviced.
10. Architecturally, this pool will fit in almost any environment, particularly our wooded park, and is decidedly different, new, novel.

Since the building of this ovoid-shaped swimming pool, everyone of high-school age in Wellsboro knows that the largest area which can be inclosed inside a line of given length is a true circle. But a circular pool is not good-looking, and it is hard to work out proper pool depths economically in one. The ovoid pool gives a larger water area with a shorter pool wall than any other design.

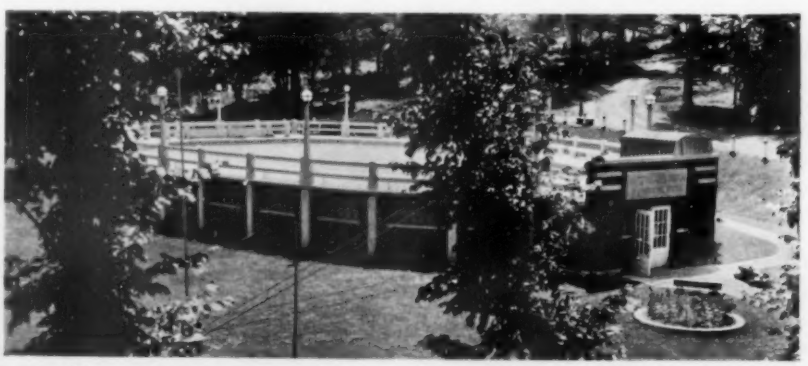
The ovoid pool takes into consideration the matter of arch and tank design and, while a rectangular pool wall needs a footing having a width of practically two-thirds the height of the wall, this large footing is entirely eliminated in the ovoid pool. Our pool wall serves as a tank and not as a retaining wall. So, we have not only a shorter pool wall to build, but one having less concrete and steel in it.

In an ideal pool, 85 per cent of the water is from 3 to 5 feet deep, with 15 per cent deep water for diving. This condition can be obtained only in large pools, since 30 to 40 feet from one end is required for diving purposes. An ovoid pool gave us 26 per cent more water of the proper wadable depth than a rectangular pool of similar dimensions.

In holding aquatic meets in a rectangular swimming pool, the two outside lanes are considered handicap lanes. There are no handicap lanes in the ovoid pool. While the spectators' seats are placed in a straight line along the side of the rectangular pool and their neighbors to the right and left interfere with their view of the contestants, with the ovoid pool the spectators are placed in an arc following the curve of the pool and therefore have a much better view of any aquatic event.

These, then, are the essential advantages of the ovoid pool as compared with the rectangular pool: (1) shorter pool wall; (2) cheaper wall; (3) greater per cent of wadable water; (4) better for both contestants and spectators at aquatic events.

Our 60 x 90-foot ovoid pool, with over-all dimensions of 77 x 120 feet, has an area of 4,435 square feet, depths from 3 to 9 feet, contains 153,000 gallons of water, is 100 per cent swimmable and 77.3 per cent wadable. The floor around the pool is 8½ feet wide. The bath-house has a net area of 2,184 square



Bintz Swimming Pool in Woodland Park, Wellsboro, Pa.

feet, equivalent to a building 25 x 94 feet. The pool includes a children's wading pool 5 x 20 feet, with a volume of 562 gallons of water. No wood was used in the construction of the pool or the bath-house.

This pool has a rated capacity of 376 persons, based on one for every 10 square feet of water surface, 3 to 5 feet deep, and one person for every 30 square feet of deep water. This load capacity can be turned over three times a day, giving a capacity of 1,130 people daily.

Actually, the patrons at any one time are divided about as follows: 25% in the bath-house, going and coming; 25% in the pool; 50% lounging, talking and amusing themselves on the concourse floor. An average of 1½ hours is spent by a person at the pool site.

Here are the areas and the equipment involved in the bath-house:

In an entrance lobby 18 x 20 feet are a counter and shelving for suits, towels and supplementary baskets, a spectators' stairway to the pool, and a corner for lounging. To the left are the women's dressing quarters, 7 x 72 feet. Here are vanity shelves, 72 steel lockers 12 x 15 x 36 inches, and 12 private dressing stalls. Next is a toilet room 7 x 27 feet, with two showers, two toilets, lavatories, footbath, and stairway up to the pool. Alongside is the public toilet for women.

Returning to the lobby, at the right is the men's locker room, 7 x 65 feet, in which are vanity shelf, 108 lockers and 9 changing benches. Next to this is a toilet room, 7 x 36 feet, containing three showers, two urinals, two toilets, lavatory, footbath, and stairway up to the pool. Next to this is the men's public toilet. At the rear are filter plant, pump, motor, chemical pots, chlorinator, electrical controls.

On the pool level and around the pool along the outside edge of the concourse floor is a two-line modernistic concrete railing inclosing also the children's wading pool. This is the first thing the bathers see on coming up to the pool. It is 6 to 12 inches deep and fenced in.

Around the edge of the pool are six ladders, eight depth signs, a springboard, a high-dive, a guard-rope and floats across the pool, separating the wading bathers from the deep end, and two floodlight standards with two 2,000-watt floodlights each, to flood the four 30-yard swimming lanes. There are also eleven 250-watt railing lamps.

To build the pool required 300 cubic yards of excavation, or about one-third of what would have been required in the conventional sunken pool. There is 51 cubic yards of gravel and cinder sub-drainage under all the floors. Construction took 165 cubic yards of concrete, 9 tons of reinforcing steel, 15,000 brick, 433 square feet of steel sash, 535 lineal feet of drainage tile, and 250 feet of 4-inch and 6-inch sewer tile.

The filter plant, built right on the job and of Wesley Bintz design, turns the water over every eight hours. The water is introduced into the pool at three points at the shallow end and through two inlets at the center of the pool, and it is taken out at the deep end through a special non-suction outlet.

The pool is operated by a pool committee acting as agents for the borough. Fees are: for children, 15 cents, or $2 for a season ticket; and adults, 25 cents, or $3 for season. We have a manager, a janitor and three lifeguards. After paying all expenses, including personnel, water, gas, light, power, chemicals, cleaning supplies, the committee showed a net season profit of $550.

Diesel Plant Grows from 20 to 400 Horsepower

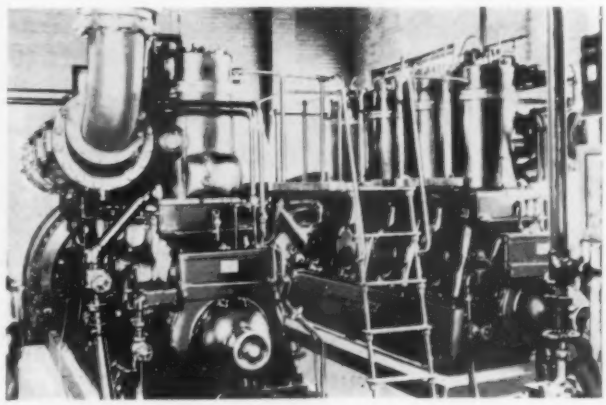
PROFITS from the sale of electric power from the municipally owned plant of Pine Bluffs, Wyo., have paid off a bonded indebtedness of $86,000. The original equipment of 1911 consisted of a 20-hp gasoline engine belted to a 15-kw generator, and a 25-hp gasoline engine driving a Triplex pump. In 1917, the demands exceeded the capacities of the engines, which were replaced by a 50-hp Fairbanks-Morse engine direct-connected to a 40-kw generator, and a 20-hp electric motor driving the old pump.

Two years later, a $40,000 bond issue was voted to build a new electric plant. This increased the total indebtedness of the town to $86,000. A new white brick building was erected, and a 100-hp Fairbanks-Morse engine, a 75-kw generator, and a 250-gpm centrifugal pump were installed. At this time the town of Bushnell, Nebr., built a 10-mile transmission line to Pine Bluffs, and bought power there at wholesale.

The next step was the installation of a 500-gpm pump, requiring additional capacity, furnished by a new 240-hp diesel unit. Then in 1937, the 50-hp engine was replaced by a 300-hp engine. The 50-hp engine, 20 years old, was sold to Chugwater, Wyo., where it still operates. The plant was now modernized by the installation of a closed cooling system, silencers and an addition to the building for the Fire Department. The engine room and Fire Department are heated with hot water from the engines, saving $120 per year in coal bills.

Not only has the electric and water plant paid for itself out of earnings, but it has also reduced all indebtedness. A total of 3,500 kw per month is used for street lighting for which no charge is made.

Rates have been reduced from 15 cents flat in 1911 to the present rate of 8 cents per kwh for the first 40, 3 cents for the next 110, and the balance at 2½ cents comparing favorably with rates in large metropolitan centers.



Installation of Fairbanks-Morse Diesels at Pine Bluffs, Wyo.

Improvements in Water Works at Albert Lea, Minn.

New 1,000,000-Gallon Elevated Storage Tops Six Years of Betterments of Service

SHINING brightly in its coat of aluminum paint, and proving an interesting part of an attractive landscape on the edge of Fountain Lake Park, or from the opposite shore, the new 1,000,000-gallon elevated water-storage tank at Albert Lea climaxes six years of steady improvements in the character of the water delivered to the mains and in service pressure.

Prior to the completion of the new tank, pressure in the city was controlled by a 125,000-gallon tank on a concrete tower, but this was inadequate from the standpoint of capacity for this city of 10,169 population which is growing steadily.

The New Elevated Steel Storage Tank at Albert Lea, Showing Some of the Details of Construction

Erection of New Tank

The foundations for the new tank were constructed by the Chicago Bridge and Iron Co., contractor for the tank. The test pile driven at the site of the tank showed a 25-ton bearing at 34 feet penetration. Therefore, 35-foot piling was ordered, but when the driving had only begun, the bearing of the successive piles dropped from that of the test pile to about 17 tons. To correct this and make up for the loss in bearing, 30-, 35- and 40-foot piles were staggered in the foundation, securing an average bearing of 25 tons for the 400 Southern pine piles. The tank, foundation and water when the tank is full weigh 5,995 tons.

The bottom of the tank is 103 feet from ground level, and the riser pipe is 8 feet in diameter. The tank itself is 71 feet 6 inches in diameter, and has an over-all height from the ground of 146 feet, or 138 feet to the overflow. It holds 35 feet of water from the bottom to the overflow. In order to prevent deterioration of the tank, it is equipped with a device for depositing hydrogen on the plates of the tank rather than permitting the attacking of the steel by the water. This was installed by the Rusta-Restor Corporation of Fremont, Ohio.

Sources of Water Supply

The water supply of the city of Albert Lea is taken from wells driven into rock underlying the city. There are three of these wells, two of which are in use at the present time. The No. 1 well is the one not in use, but it is planned to put it into service soon. It was a flowing well 480 feet deep with a 12-inch casing and will be equipped with a deep-well turbine. The No. 2 well is 680 feet deep with a 12-

inch casing and is pumped by a Peerless deep-well pump powered by a U. S. Electrical Motors 50-hp motor with a standby engine, a 6-cylinder Hercules, for use in case of power failure. Well No. 3 has a 20-inch casing 305 feet deep driven by the McCarthy Well Co. and equipped with an American Well Works turbine pump driven by a 50-hp General Electric motor.

The well pumps deliver the water to a 1,500,000-gallon circular concrete reservoir which surrounds the supporting tower of the old concrete elevated tank. Here the water is treated as described below before being pumped into the mains.

The three high-lift pumps take suction from a well in the reservoir. There are two 1,500-gpm Worthington centrifugals driven by 60-hp G-E motors, and a 5,000-gpm Dean Hill pump with a 200-hp G-E motor. This is used at the standby pump also, and has a 6-cylinder Buffalo gas engine on the opposite end of the shaft from the motor. Each of the pumps is equipped with a General Electric time switch set to operate the pumps on off-peak loads of the local power company. This was not possible with the old small tank, but the larger storage of the new tank permits these economies. The water delivered by the high-lift pumps is metered by a Builders Iron Foundry venturi for the two Worthington pumps, and a Foxboro meter on the large pump.

Treatment of Water

The 1.5-mg circular reservoir has been converted into a settling basin, which has greatly improved the character of the water. The water from the well pumps goes through a Vogt Aer-O-Mix aerator mounted above the top of the circular reservoir and then flows over a baffle and drops 8 feet into the reservoir. This treatment removes the CO_2 which holds iron in solution. The addition of about 2 pounds of chlorine per hour of pumping has eliminated the large amount of Crenothrix and other iron bacteria from the raw water, and the lime added as the water flows from the riser pipe after the aerator has improved the settling of the iron in the water so that it does not reach the mains. About 2 grains per gallon or 34 ppm of lime is used, fed automatically with the starting and stopping of the pump by an Omega dry chemical feeder. Similarly, the chlorine as fed by the Wallace & Tiernan machines starts and stops automatically with the pumps. The chlorine is set to show a residual of 0.2 ppm at the reservoir.

The flow of water in the reservoir or settling basin is of particular interest, for it shows the effective use of old structures in a plant constantly modernizing. The reservoir is 30 feet deep, and the water from the aerator, to which has been added the lime, enters behind a baffle which forces the water to flow toward the bottom of the reservoir and behind a division wall which allows the water to flow only toward the left in the reservoir. The water must flow around the entire periphery of the reservoir and then over a baffle wall 18 feet high into the sump, from which the high-lift pumps take their suction. It has been necessary to clean this settling basin only once a year since its use was started.

The New Steel Tank with the Old Concrete Tower and Tank at the Right, Albert Lea, Minn.

Prior to this treatment, iron was the curse of the householder, for the raw well water has from 2 to 3 ppm of iron, which increased with the iron bacteria formerly prevalent in the water. Now the iron in the tap water never runs higher than 0.5 ppm.

The Water Department of Albert Lea is under the direction of R. L. Van Nocker, City Manager, and C. V. Jones, City Engineer, with Benjamin Cipra as Foreman.

The Fight on Roadside Blight

From report of Committee on Roadside Development and Control submitted by Coleman W. Roberts, Chairman, to the annual convention of the American Automobile Association, Washington, D. C., November, 1939:

LEGISLATION designed to protect roadsides from the spread of commercial unsightliness, although introduced in some twenty states, made very little progress during 1939 sessions of state legislatures. Bills embodying the principles of the Suggested Uniform Act for Roadside Development and Control, approved by the A.A.A. last year, were introduced in seven states, but in none of these were they successful in passing all the way through legislative machinery. States where such bills were introduced included Florida, Indiana, Maryland, North Carolina, Ohio, Utah and Washington.

Some advances were made in other methods of roadside protection. For example, Florida enacted legislation empowering one county—counties between 13,300 and 13,360 population is the way the law is worded—to regulate advertising along the highway. Counties in Georgia, between 72,500 and 73,500 population, were authorized to regulate building and construction in unincorporated areas; and Missouri permits counties between 200,000 and 400,000 to provide for county planning and zoning.

New Hampshire adopted a law forbidding the erection of "motor vehicle junk yards" within 200 feet of the highway unless enclosed from the highway by a wooden fence.

Delaware adopted an outdoor advertising licensing law, requiring individual device permits; Maine increased the fee for outdoor advertising licenses from $25 to $100; Vermont changed the rates for permits under its licensing law; and Tennessee, which theretofore had imposed only a license fee on those engaged in outdoor advertising, imposes permit fees on all signs.

Lights or light-reflecting devices which interfere with the vision of operators on primary roads are to be removed in Iowa; Connecticut requires the removal of cut brush and hazard-causing material along the highway; and Indiana and New York require the cutting-down of noxious weeds within the limits of both town and county highways.

All Realty Taxes on One Card,

and the Accounting Control Thereof

(Concluded from page 65 of the November issue)

By John E. Schriver, C.P.A.
Research Director in Tax Accounting for Delinquent Tax Commission of Ohio

THE present-day tax roll or tax duplicate corresponds with the old "Boston Ledger" formerly used almost universally by banks, which now has been completely abandoned in favor of the unit form of ledger account as used by commercial and industrial business enterprises.

The unit form of ledger account, in addition to its flexibility as a pen and ink record, is also adaptable to modern accounting machines. This is very desirable for cities and counties that want accounting systems as efficient as those used by banks and leading businesses.

A number of progressive cities and counties already use a unit tax ledger, which is, in effect, an abstract of tax status of each parcel of property, and presents these advantages:

1. All information on each parcel of property is in one place.
2. Any account can be quickly audited.
3. Service to taxpayers is accelerated.
4. Duplicate bills for collection follow-up, as used by commercial business, can easily be prepared.
5. Trial balances may be obtained at any time.
6. Furnishes positive control over both current and delinquent charges.
7. Permits reference to, and use of, a unit or group of cards without tying up the records of an entire tax district as in the case of a tax roll.
8. Parcel numbering plan permits the assignment of permanent numbers to each parcel of property in the taxable area, and the accurate filing of all ledgers in numerical order as contrasted with the inaccurate filing alphabetically.
9. Flexible, readily adaptable to local requirements.
10. Easy and less expensive to audit. (Present records are cumbersome, there are no accounting controls, and therefore the task is burdensome and meaningless.)

A number of cities and counties throughout the United States have installed the Unit Plan, and all are satisfied that the step was one toward greater efficiency.

Accounting Controls

After the unit tax ledger has been established, a control account should be set up showing the grand total of all *valuations* on the individual cards contained in each ward or district, and a master control account of the entire taxable area. This is the same manner in which controls are maintained over the depositors' accounts in a bank or the customers' accounts in a mercantile establishment.

Similar controls should be set up for the amount of taxes to be collected. These can be computed by multiplying the valuation for each district, as shown by the valuation control account, by the tax rate for the particular year involved. When the tax bills are actually mailed to the taxpayers, a total of the bills should be taken to see that the grand total thereof agrees with the established control.

Billing and Collecting

After the assessments have been properly computed, the next step is to get the tax bills in the hands of the taxpayers. It is recommended that tax bills be rendered monthly to reduce delinquencies.

While it is a well-known fact that depressed business conditions have been largely responsible for the present delinquent situation, we soon discovered that a great part of the condition has been brought about by the absence of proper methods that would permit local tax-collecting officials to employ modern tactics in collecting taxes. The taxpayer of today has been educated by the Gas Company, the Department Store, and the Grocer, to pay his bills in a well-regulated manner, but inasmuch as the attempt to collect taxes is done in an entirely different way, the result is that the rate of tax collection is far below the collecting rating of the average commercial enterprise.

Receipting for tax bills is an item that needs careful consideration. The present methods of using rubber stamps and perforating machines for receipting tax bills should not be permitted, since it is impossible to place the responsibility for receipted bills.

The ideal way to eliminate this temptation and definitely place the responsibility is to use tax-receipting machines equipped with a cashier's lock to prevent machine operations without its use. Such a machine will lock-in copies of totals receipted for, and the receipts are consecutively numbered and dated, and cannot be removed except by authorized officials.

Under this system each cashier is responsible for his errors in making change as well as all bills receipted by his machine.

Tax-receipting machines protect the cashiers, the collectors, the taxpayers, and the city and county. The cashiers are protected because they have positive control of their machine. The collectors are protected because they have locked-in amounts and a detail audit tape of receipted bills to check the cash against. The taxpayer is protected if he misplaces his receipt, because the receipted copy of his receipt cannot be held out.

Delinquent notices should be sent out just as soon as practical after the delinquent date. This will obviously bring in additional revenue; and if properly handled, it is the surest and quickest means of locating errors. It will also guard against defalcations.

Billing special assessments separately makes it easier for the taxpayer to meet his tax obligations, the same as installment buying makes it possible for some people to own homes who could not otherwise acquire them. Large tax bills are a detriment to collections and have proved to be the cause of many delinquencies.

New Cast Iron Pipe Line and Large Covered Water Reservoir on Hill Create

Important Assets of Gloucester Supply

Rolling Pipe Up-Hill on Skids

TWO major needed improvements to the water-supply system of Gloucester, Mass., are at last being realized. John W. Moran, who resigned as Superintendent of the Water Department on July 1, 1939, at the age of 80, had advocated these improvements for many years, and one was completed and the other started before his retirement. The old 3,000,000-gallon reservoir on Bond's Hill was not adequate in capacity for all the needs of the city, and its elevation is such that the houses on the higher parts of the city have a pressure of only 10 pounds at their services. The new reservoir, hewn out of hard granite, will add 12½ pounds to the pressure throughout the city and will double the storage available.

New Pipe Line

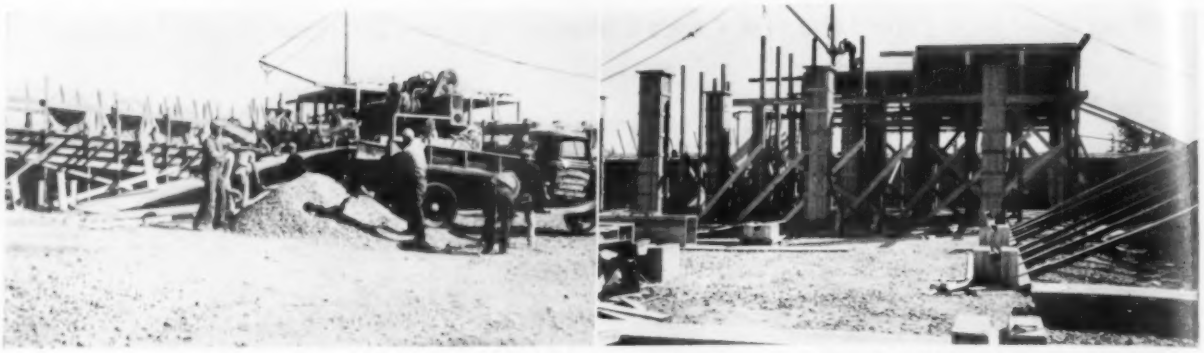
The old reservoir was connected with the distribution system by a cement-lined and cement-coated 18-inch steel pipe line. This has been replaced with 20-inch Class 150 Super-DeLavaud bell-and-spigot cast iron cement-lined pipe, laid entirely by relief labor. This has been extended above the old reservoir to the site of the new reservoir, with a 20-inch lateral and spur so that it is ready for connection to the reservoir when completed.

Work on the new 20-inch line was begun in April, 1938, with the hauling of the pipe from the cars by truck to a point at the bottom of the hill near the site of the work. Before it was possible to move the pipe from that point to the line of the trench the right-of-way had to be cleared of trees and boulders. The line of the trench at the hill is steep and rocky and required hard hand digging. In order to move the pipe up the hill it was rolled on skids by man power. In view of this situation the pipe was ordered in 12-foot lengths. There was some delay after about one-third of the pipe line had been completed in July, because most of the labor employed had found private employment during the height of the vacation and fishing seasons in Gloucester. Activity was resumed in November and finished in December, 1938. After the men became familiar with handling the pipe and pouring the Leadite joints, the operation proceeded smoothly. A total of 2,438 feet of pipe purchased from the United States Pipe & Foundry Co. was used on this line. There will be another longer line as a new project to be started probably before the reservoir project is completed. This line will be one mile in length from the pumping station and will replace the present 16-inch line with a 20-inch cast iron line.

New Covered Reservoir

The new 6-mg covered reservoir was started in January, 1938, and it is expected that almost twelve additional months from this writing in September, 1939, will be required for final completion. Every cubic foot of the reservoir has been hewn out of hard granite ledge, a total of 993 cubic yards of which has already been removed, and the total will amount to about 10,000 cubic yards. This is being done as a major relief project in the city and has provided employment for an average of 50 men, which was increased to a maximum of 110 dur-

Lowering a 12-Foot Length into the Trench



The Concreting Plant and Form Work at the New Reservoir, Gloucester, Mass.

ing the height of the work and dropped to 85 after the 18-months regulation of WPA went into effect.

The reservoir is 324 x 158 feet in plan, with 144 columns 2 feet square carrying groined arches supporting the 6-inch roof. Because of the uneveness of the ledge at the site, it was necessary to pour a considerable volume of concrete to level the floor before the 8-inch uniform floor of the reservoir was poured. The height from the floor to the roof will be 19 feet, of which 16 feet will be filled with water when the reservoir is in service. It is divided transversely by a concrete center wall to permit unwatering and cleaning one section without putting the entire reservoir out of service, if that should be necessary. The division wall is 12 inches wide at the top, 18 inches wide at the bottom, and 14 feet high. It is only lightly reinforced.

The walls, floor space and columns of the reservoir require a total of 7,000 cubic yards of concrete, which has been mixed at the rate of about 50 yards per day when concreting operations have been carried on, using two 2-bag Jaeger mixers. In order to pour the columns satisfactorily and to minimize the moving of either dry aggregates or the mixed batch, the mixers were moved into the reservoir area, and for pouring the upper portion a 39-foot elevator was used to raise the concrete to a hopper from which it was emptied into buggies and wheeled to the various tiers, arches or roof. The fill concrete was 1:3:6 mix, and the remaining concrete a 1:2:4 concrete, all mixed 1½ minutes. Care has been taken to get in as much of the concrete as possible before cold weather when, because of the exposed location of the reservoir, such operations will have to be discontinued. Most of the rock excavation has been saved to be carried on when possible throughout the winter. The concrete fill and column bases will also be poured during cold weather.

Costs

The actual cost of pipe for the completed pipe line was $8,200, and WPA labor furnished for the work amounted to $14,600, making the total cost of the pipe line amount to $22,800.

The estimated costs of the reservoir as proposed in the original design were: Federal funds for labor, $85,790.30; Federal funds for material, $9,660; making a total of $95,450.30. The sponsor, the city of Gloucester, will furnish for labor, supervision and materials, a total of $64,339.70 as the sponsor's share. This brings the grand total of the estimated cost of the reservoir to $159,790.00.

These projects were started while John W. Moran was Superintendent of the Water Department and are being continued under the direction of L. B. Hull, Acting Superintendent. Raymond F. Simons is WPA Supervisor on the reservoir project.

Pouring a Joint

To Conserve Values of Central Business Districts

IF WE were to use our streets for carrying traffic instead of for stopping traffic, we could do much to conserve the tremendous values in real estate represented in downtown business properties. This was the theme of a talk by Thurston H. Ross, Director of the Bureau of Business Research of the University of Southern California, before the recent annual convention of the National Association of Real Estate Boards.

"We are from habit routing our street cars and all our other traffic straight through our downtown districts, unnecessarily adding to traffic jam," Mr. Ross pointed out. "In Los Angeles, for example," he said, "the industrial district is very largely in the eastern and southeastern part of the city. The workers in the industries live, for the most part, in the south and west. To go to their work they must go through the downtown section, at a loss of time and adding unnecessarily to traffic congestion. Through-traffic lanes might quite as well be run three or four blocks away from the principal business area. The traffic problem can be solved, but it must be solved on an economic and engineering rather than on a political basis."

Up-to-the-Minute Records Help Public and Court

By CHARLES R. ETTINGER
Clerk, Marion County Circuit Court
Indianapolis, Ind.

REALIZING the necessity of replacing the cumbersome and outmoded methods used in the support docket division of the Marion County Circuit Court, early in 1939 we formulated plans to meet two objectives: (1) to ease the "traffic" congestion in the office; and (2) to provide a modern method for handling cash and for keeping our records accurate and up to date.

Former Inefficient Procedure

People paying and receiving support money generally are in poor financial circumstances, and payments therefore tend to be irregular. Under our old system, the recipient of payments had no way of knowing whether the money was available, except by calling personally or telephoning. Many times, a personal call at the office would lengthen into an all-day vigil as the dependent waited for the money to come in.

Often, too, the dependent would make several such trips to the office, get discouraged, decide that payments would not be made, and stop coming. The payer then might begin to make payments, which would remain in the clerk's fund for considerable time before the payee discovered the money was available. Those physically unable to come to the office would send children or other persons to claim the money and receipt the docket—a procedure which led to serious questions of the identity and authority of such agents.

It was not uncommon for fifty to sixty persons to be congregated in our relatively small offices, waiting for their money. Naturally, such a crowd interfered with other work in the office.

Under our former accounting methods, two clerks received and disbursed the cash and kept all records, without an internal control. The duplicate receipt, ledger, cash journal, and disbursements records were each prepared separately by hand. For proof and control, it was necessary to total each of these groups separately each day.

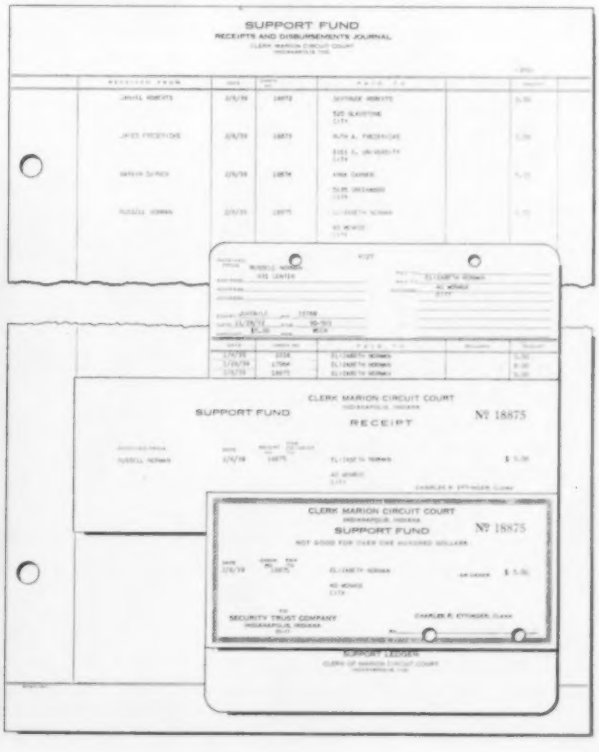
The clerical staff was inadequate to the task of keeping the journals up-to-date. At one time, the cash journal was months behind. Extra help was often required. Errors and shortages were frequent, and discrepancies between the hand-posted records occurred regularly.

The Change to Efficiency

Our first step under the new system — the important feature in eliminating the "traffic" problem— was to change from paying cash direct to the person or his agent, to paying by check through the mail. To prepare the revised records, our

WITH THIS FORM-WRITING MACHINE, ACCURATE RECORDS ARE MADE OF EACH SUPPORT-PAYMENT WHEN THE PAYER PAYS IT

Simple machine at left; at right, the check, receipt, ledger card and journal, posted in one operation. As soon as she has written these, the clerk passes the check and receipt through the adjacent window to the cashier, who receives the money from the payer. Each day's cash must balance with the day's postings on the journal



department purchased a Burroughs Multiple Form-Writing Machine. Through this single piece of office equipment, it is possible to write a receipt and a check and post the amount to the ledger and cash journal *all in one operation*. The person making a payment at the office comes directly to the ledger clerk, who prepares all the records immediately. The check and receipt are passed through the adjacent window to the cashier, who stamps the receipt as paid, receives the money from the payer, and holds the check to be mailed that same day.

Several of the automatic features of the form-writing machine are especially fine in helping us speed up and simplify our work. The ledger, receipt, and check are easily inserted in front of the platen and quickly aligned to the proper spaces. The cash journal, which remains in the machine and is prepared as a by-product of writing the other forms, is automatically spaced up to the next writing line as each set of forms is completed. At the end of the day, the ledger clerk adds the day's cash journal entries. Against this total figure, the cashier must balance the total cash taken in, providing the department with a simple proof of posting accuracy and a control of the cash handled.

Mail delivery and endorsement of checks have proved a satisfactory safeguard that the money is received by the proper person. A man making payment under court order has complete assurance that the person for whom the money is paid is receiving it, for his receipt shows the name of this individual.

The difference made by the new system is almost unbelievable. All support money is paid by check, and dependents can no longer come to the office to collect. Money received in cash is disbursed the same day; support payments mailed in by check are held only long enough for the check to clear through the banks.

There are seldom more than five persons at a time at the support window these days. Inasmuch as the ledger clerk writes and posts all the necessary records while the payer is at the window, the records are up-to-date, the line moves rapidly, and our regular staff is adequate to handle the work at all times. This is especially advantageous in that about 35,000 items must be handled annually on 2,000 active accounts.

The form-writing machine, which provides all the advantages of neat, uniform, and machine-printed records, can also be used for other typing and writing jobs. Auditors from the Indiana State Board of Accounts have commented favorably on the new system, in that the accounts are uniform and up-to-date at all times, and easy to check. We estimate that within a short time the savings should pay for the equipment purchased.

And, most important of all, we feel that the people receiving support are now decidedly benefited since our half-million dollars worth of support business has been placed on a modern plane of efficiency.

Christmas Comes to Lancaster, Pa.

Filtration Plant Is Decorated for Yuletide and Attracts Many Visitors

MERRY CHRISTMAS is a greeting from friend to friend, but of recent years it has been extended by many municipalities to their citizens by community Christmas trees. The Bureau of Water of Lancaster, Pa., has gone one step farther and decorated its filtration plant most attractively and invited all its friends to pay it a visit. Last year, during the fifteen days from December 22 to January 10, nearly 35,000 visitors came to the filtration plant and enjoyed the spirit of Christmas exemplified by the delightful exhibit prepared by employees of the Bureau of Water. Many of the citizens had never visited the water plant before the local press gave publicity to the Christmas display.

Through the courtesy of Chas. P. Abraham, Superintendent, Bureau of Water, and L. S. Duckworth, Filter Plant Superintendent, we show on our front cover a photograph of the interior of the filter plant, looking toward the master control table. Thirty-four evergreen trees were transplanted from the nursery on the city's watershed, and placed in metal boxes made by employees of the Department. These trees were all trimmed with colored lights, and then wreaths of evergreen were hung on the wall, and 50 16-point stars in red were hung over the filters. The spirit of the holidays was further carried out by 30 5-foot candles placed along the coping inside the center of the filter gallery and lighted.

In all, there were 1,788 colored lights in the display, and the combinations changed the color scheme every 10 seconds. In addition to these strictly Christmas decorations, two miniature gardens were created, consisting of more than 600 live plants each, with small fountains and waterfalls.

The 1939 display features a number of changes, including a Bible story with life-sized figures, as well as some change in the electrical display. In addition to the display inside the building, colored floodlights play on the front of the building, and a number of the evergreen trees in the grounds of the filter plant and the pumping station are trimmed with colored lights.

It is interesting to know that the entire display has been financed by the employees of the Bureau of Water, and the work of erecting it has been done after working hours. Our sincere congratulations to the Bureau of Water and its employees for recreating the Christmas spirit and attracting so many of their own citizens to the fountainhead of pure water.

New Government Research Bureau

A BUREAU OF GOVERNMENT RESEARCH has been established at the University of New Hampshire, at Durham, as the result of demands for extension of the services of the University. While the main interest of the Bureau is research, it will act as a clearing-house on problems of public administration and finance for New Hampshire state and local governments, and will be the central agency for the interne and in-service training programs of the Department of Government. Space has been set aside in Morrill Hall for offices, conference rooms and a library. Prof. Thorsten V. Kalijarvi, head of the Department of Government, is the Chairman of the Executive Council, and Lashley G. Harvey, Assistant Professor of Government, is Exec. Sec.

Has Detroit Slums?

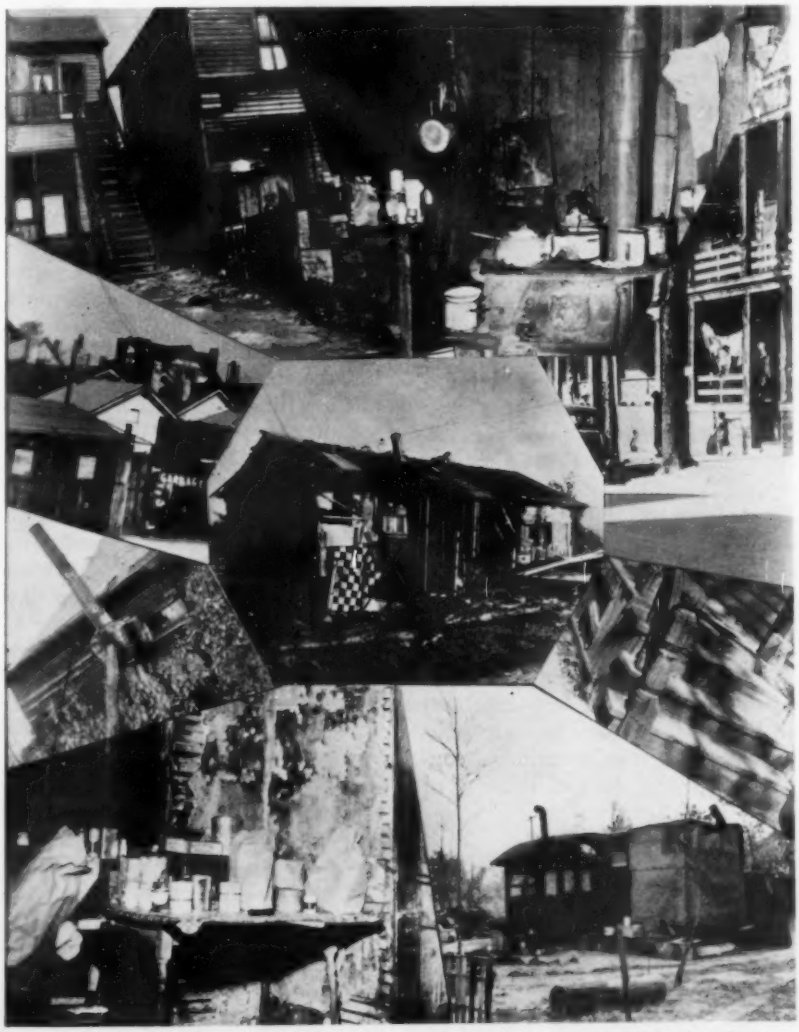
By SUSANNE STODDARD

Citizens' Housing and Planning Council, Detroit, Mich.

A SURPRISING unawareness of the existence of slums in Detroit has been one of the main problems to be met in the campaign for better housing. No *tenements* rear their ugly heads in this city, and the people in general congratulated themselves on living in a great modern metropolis, the fourth in size in the country, that had no slums — or they gave the matter no thought. They had not seen the blocks and acres and miles of dilapidation and decay, the rotting core of the city.

So, as a part of its publicity and education program, the Citizens' Housing and Planning Council of Detroit sponsored a camera contest for amateurs "to show bad housing in Detroit." In this the Council had the hearty cooperation of the Public Library.

Much interest in the contest was manifested throughout the city. High schools and camera clubs were especially enthusiastic. The newspapers gave excellent publicity to the project, printing advance notices and displaying the prize-winning pictures in their photographic sections.



First prize photographs—"The best story of bad housing," by Michael J. Roll

Second prize winner, by Lou Gardner

During the first weeks of the contest, pictures of Detroit slum houses were exhibited at the Main Library and the four largest branches. These were to show amateur photographers what sort of work was wanted. On the closing date of the contest, October 26, the fifteen best of the many pictures submitted were chosen by the judges, three photographic and housing experts. These were enlarged to the same size, 11 x 14, and were then exhibited in the five libraries for the public to vote on them.

Many thousands saw the pictures. People gasped in shocked surprise that such conditions could exist in Detroit. Views of the worst crowded areas and of the most dilapidated structures were there, also trailers and frail tumbledown shacks on the outskirts of the city, plantation huts in a northern climate.

Twelve prizes were given, the first a cash prize contributed by friends of the Housing Council, and the others merchandise certificates presented by four leading camera shops in Detroit. They were awarded at a celebration housing dinner on November 27.

The results of the contest were three-fold. It provided many photographic exhibits for future use, which are constantly in demand. It brought the attention of thousands of citizens to the need for slum clearance and better housing in Detroit. And, as the location of the house photographed was given in each case, these places are to be investigated, and wherever conditions warrant it, recommendations for demolition or repair will be made to the proper authorities.

A Popular Beach, and a New Sewage-Treatment Plant in Plattsburgh, N. Y., Lead to

Charges for Sewer Service

By L. A. Bouyea
Mayor, Plattsburgh, New York

AFTER the city of Plattsburgh had established a municipal beach several years ago on Cumberland Bay at the northern limits of the city and only two miles from the river where the city's heaviest sewers are located, objections to stream pollution began to roll in. Situated in the northeast corner of New York State on Lake Champlain, this city of 14,000 inhabitants had become a popular week-end resort during the summer for from 8,000 to 10,000 Canadian and American bathers, which heightened the objections to the pollution of the stream by city sewage.

Before anything definite could be done, however, several angles had to be considered. First in importance was the question of finance. The city had recently completed the construction of a filtration plant which assured a supply of pure, filtered water. In addition, the reservoirs had been enlarged and two of them had been given concrete bottoms and sides; streets, sidewalks and curbs had been constructed under WPA, and numerous other improvements had taken place all within a short time. These had required capital, and a bond issue had been authorized for the filtration plant.

The local administration recognized the need of a sewage-treatment plant, but it had to guard the contractual margin of the municipality, and the issuance of bonds for the plant might seriously affect the financial structure. There was one encouraging feature. The PWA was anxious to carry on the type of project represented by the sewage-treatment plant, and so would provide a substantial grant and also purchase bonds of the city for this purpose. With the National Government interested, part of the financing of the project was of course greatly simplified. There still remained, however, the local share with its relation to the borrowing capacity of the city; and before any material advancement could be made, a safe and satisfactory solution had to be found.

The Revenue Bond Act

The Revenue Bond Act of New York State, Chapter 525 of the laws of 1935, provided the solution. This act was devised to assist the financing of self-liquidating improvements, and specifically mentions tunnels, bridges, docks, water-supply improvements, sewers and sewage-treatment works. It also provides for the issuance of bonds for the improvements enumerated and the establishment and collection of rates, fees, tolls or charges for the service performed by the undertaking.

As revenue-producing bonds do not reflect against the credit of a municipality, and every indication pointed to the sewage-treatment plant as being self-supporting when once in operation, the local administration took action. The Mayor was authorized to engage the services of engineers to make a survey, to draw plans and furnish estimates preparatory to submitting a project to PWA. After months of preparation and the usual complicated procedure, the go-ahead signal was flashed. A referendum was held and the voters overwhelmingly endorsed the improvement. On May 7, 1937, the project was approved with the total cost fixed at $340,000, the Federal Government contributing $153,000 and the city of Plattsburgh $187,000.

Sewer-Service Charges

The question of revenue was of paramount importance. The same act of the State Legislature that made the construction of the plant possible also provided for sewer-rental charges if the municipality desired to raise the necessary revenue by that method. Plattsburgh was the first municipality in New York State to utilize sewer-service charges to amortize the bonds and carry the maintenance charges of a sewage-treatment plant. The city ordinance went into effect in February, 1938. However, as the plant was still under construction, a special provision of the ordinance specified that rental rates should be charged for only one-half the year.

Rental rates for sewers are embodied in the one tax claim which each taxpayer receives. To facilitate the collection of taxes and reduce the likelihood of delinquent taxes, the city had previously adopted a quarterly tax payment plan. At first the taxpayers were somewhat disconcerted, but an explanation of the special item almost without exception brought about an understanding.

The schedule of rates which have been adopted is a sliding scale; that is, for residences. The rate for a one-family dwelling is $6.50, and for an apartment house of 17 families the cost is $23 with other sizes of dwellings in between; high schools $25, and grade schools $15; churches $6.50; the state normal school $50; the City Hall $25; fire station $8; hotels from $25 to $50, depending upon their capacity, with public or business toilets assessed at $5 each. Creameries pay $50; garages where cars are washed, $25; filling stations where cars are washed, $12.50; and greenhouses $15. Hospitals pay $50 and laundries $25.

The local ordinance providing for sewer-rental charges was designed to meet all the operating charges against the new treatment works and to provide funds to meet the annual bond and interest charges, against both the treatment plant and the intercepting sewers.

—From a paper presented at the 30th Annual Meeting of the Conference of Mayors and Other Municipal Officials of the State of New York.

Motorists Overwhelmingly Favor Pittsburgh's Parking Meters

By DONALD M. McNEIL
Traffic Engineer, Pittsburgh, Pa.

LIKE other cities throughout the country, Pittsburgh has many traffic problems. It is recognized that the proper distribution of premium street parking space to the greatest number of persons is much to be desired, but difficult to control by regulation.

Therefore, with the idea of facilitating and abetting the enforcement of parking regulations without a great increase in man-power, and of obtaining a more efficient use of premium street space for the movement of traffic and equitable distribution for legitimate business purposes, the city of Pittsburgh decided upon a trial installation of parking meters in selected portions of four business areas of the city. The Better Traffic Committee selected the section, and 437 Mi-Co parking meters were installed.

In order to make an impartial check on meters as they affect number of vehicles parked, parking time, legality of parking as to time and location, degree of enforcement, and speed, one survey was made prior to the installation, one 21 days after, and another three months after installation.

While a great many more data are included in the report, comprising detailed summaries for various sections of the city, the table above, comparing conditions before and three months after, covers the most pertinent facts.

Although no such summary table is given in the report, a summary of the data indicates slight increases in both speed and volume, when comparing "before" with "three months after" the meter installation. The average speed increased 9.9 per cent, and volume increased 5.71 per cent. Parking is only one of the factors affecting speed, since in most districts signal control permits only a fixed maximum speed, rarely attained, owing to interferences caused by left-turn conflicts, and slow right turns with pedestrian interference.

	Before	After	Increase or Decrease	% Change
Cars parked	7,456	5,218	—2,238	— 30.0
Average time in minutes	25.5	21.7	— 3.8	— 15.0
Cars parked illegally:				
By location	1,547	494	—1,053	— 68.1
By time	717	270	— 447	— 62.4
Tags issued for violation:				
Illegal location	13	42	+ 29	+223.0
Illegal time	2	5	+ 3	+150.0
Total	15	47	+ 32	+213.3

In addition to the before-and-after study of general street use, a survey of public opinion was made. Questionnaires distributed three months after meters were installed, brought the opinions of two groups: business proprietors upon whose frontages meters were installed; and motorists actually parking at meter locations as follows:

	Number		Per Cent	
	Yes	No	Yes	No
Do you favor the retention of parking meters?	2,007	98	95.3	4.7
Were you opposed to the installation of meters?	159	1,946	7.5	92.5
Do you use the parking meters daily or occasionally?	1,063	1,043	50.4	49.6

SUMMARY OF THE MERCHANT ANSWERS

		Number	Per Cent
Do the majority of your customers like or dislike parking meters?	Like	142	73.2
	Dislike	33	17.0
	Disinterested	19	9.8
What effect have parking meters had on your business?	None	120	61.9
	Increased	28	14.4
	Decreased	15	7.7
	Unknown	31	16.0
Were you originally opposed to parking meters.	Yes	64	33.0
	No	114	58.8
	Disinterested	16	8.2
Do you favor the retention of meters?	Yes	168	86.6
	No	20	10.3
	Disinterested	6	3.1

Conclusions

1. The installation of parking meters with the necessary stall marking at the curb, definitely indicates legal parking spaces, and thereby greatly facilitating enforcement in regard to location, such as fire hydrants, entrances, corner areas, and car stops.

2. Parking meters permit a more accurate check by officer of time limit of parking and leave no doubt as to violation.

3. The installation of meters has made more curb space available to the motoring public for the transaction of business, by eliminating the curb hog or long-time parker.

4. Meters have considerably reduced illegal parking as to both location and time.

5. Since the parker's time and space is closely measured, he transacts his business more rapidly and occupies the premium space only for the length of time necessary, and is forced into consciousness of parking regulations as to time and location.

6. Meters have helped to obtain a slight increase in vehicular speeds.

7. A decided majority of the proprietors of business establishments in front of which meters have been installed highly favor the meters and their retention.

8. The great majority of the customers of the above proprietors favor the meters and their retention.

9. The overwhelming majority of the curb parking motorists favor the meters and their retention.

10. In general, to date the installation of parking meters has proved very satisfactory.

Recommendations

1. That the parking meters now installed in the four districts of the city of Pittsburgh be accepted and permitted to remain in operation.

2. That study and consideration be given to other streets in the same districts to determine the advisability of extending meter control over a greater area in each district.

3. That other sections or areas of Pittsburgh be investigated and studied to determine the advisability of the installation of parking meters.

Publicly Owned Motor Vehicles in the United States

Poor Registration Methods in Most States Prevent Ready Segregation into Federal, State, County and Municipal Ownership

OF THE nearly 30,000,000 motor vehicles registered in the United States in 1938, more than 367,000 are shown by statistics of the Public Roads Administration, Federal Works Agency, to be owned and operated by government agencies — Federal, state, county and municipal departments.

Of this number, the Federal Government operated 109,761 automobiles, motor-buses, motor-trucks, tractor trucks, etc., as well as 2,564 trailers and semi-trailers and 799 motorcycles, making a total of 113,124 vehicles in use in the performance of the many functions of the National Government.

While exact statistics for publicly owned vehicles other than those of the Federal Government are not available, figures assembled by the Division of Control of the Public Roads Administration indicate that approximately 274,000 are owned and operated by state, county and municipal governments.

On the basis of these figures, the number of Federally-owned vehicles increased 4.7 per cent over the 1937 total, while the number of other publicly owned vehicles increased by 11.3 per cent in the same period.

Included among the Federal vehicles were 17,971 automobiles, 647 buses, 91,143 motor-trucks, tractor trucks, etc., 2,564 trailers and semi-trailers, and 799 motorcycles. The data collected by the Public Roads Administration on other publicly owned vehicles include 50,284 automobiles, 22,290 motor-buses, 117,239 motor-trucks, tractor trucks, etc., 67,656 unreported types, 8,610 trailers and semi-trailers, and 8,081 motorcycles.

In a recent report on public ownership of motor vehicles, Robert H. Paddock, associate highway engineer-economist, commented:

"This tabulation illustrates strikingly

(*Continued on page 65*)

FEDERAL (1)

State	Automobile	Motor-Buses	Trucks, Tractor Trucks, etc.	Trailers and Semi-Trailers	Motorcycles	Total Vehicles
Alabama	440	13	1,539	55	4	2,051
Arizona	496	73	1,805	97	4	2,475
Arkansas	270	8	1,789	25	1	2,093
California	1,121	71	6,347	276	75	7,890
Colorado	367	23	1,957	23	7	2,377
Connecticut	64	1	590	6	1	662
Delaware	15	..	297	4	..	316
Florida	349	10	1,428	25	15	1,827
Georgia	582	39	2,044	45	33	2,743
Idaho	134	3	1,404	80	..	1,621
Illinois	507	9	2,801	98	19	3,434
Indiana	193	1	1,437	86	15	1,732
Iowa	187	1	1,224	22	6	1,440
Kansas	230	2	1,272	61	9	1,574
Kentucky	277	3	1,291	11	109	1,691
Louisiana	413	16	1,398	27	13	1,867
Maine	119	1	432	10	5	567
Maryland	379	21	1,966	61	21	2,448
Massachusetts	428	20	2,269	31	11	2,759
Michigan	304	5	2,233	81	17	2,640
Minnesota	395	3	2,111	56	10	2,575
Mississippi	174	18	1,283	57	1	1,533
Missouri	317	15	1,753	27	6	2,118
Montana	389	3	1,698	27	..	2,117
Nebraska	243	3	953	14	8	1,221
Nevada	141	5	550	21	2	719
New Hampshire	21	..	634	19	1	675
New Jersey	266	5	2,492	26	14	2,803
New Mexico	457	12	1,709	67	..	2,245
New York	919	36	4,674	49	81	5,759
North Carolina	380	13	1,788	42	3	2,226
North Dakota	154	19	615	12	..	800
Ohio	390	10	2,076	85	6	2,567
Oklahoma	507	20	1,908	42	14	2,491
Oregon	337	8	2,476	33	4	2,858
Pennsylvania	482	5	3,496	123	24	4,130
Rhode Island	43	12	405	16	1	477
South Carolina	245	17	1,308	14	5	1,589
South Dakota	208	13	1,020	17	2	1,260
Tennessee	369	..	1,799	45	2	2,215
Texas	1,193	33	4,142	148	75	5,591
Utah	265	3	1,490	56	10	1,824
Vermont	126	2	520	14	..	662
Virginia	408	42	2,781	217	52	3,500
Washington	603	5	2,607	77	27	3,319
West Virginia	148	2	1,038	6	..	1,194
Wisconsin	267	3	2,030	39	5	2,344
Wyoming	205	4	1,091	26	9	1,335
District of Columbia	354	7	901	20	62	1,344
At large (6)	1,090	9	4,272	45	10	5,426
Total	17,971	647	91,143	2,564	799	113,124

STATE, COUNTY, AND MUNICIPAL (2)

State	Automobiles	Motor-Buses	Trucks, Tractor Trucks, etc.	Type Not Reported	Trailers and Semi-Trailers	Motorcycles	Total Vehicles
Alabama	...	...	...	3,755	...	143	3,898
Arizona	527	207	1,320	...	181	23	2,258
Arkansas	1,264	1,042	887	...	13	31	3,237
California	...	...	...	24,502	1,646	1,157	27,305
Colorado	...	...	...	...	...	...	... (3)
Connecticut	1,450	...	2,441	...	87	294	4,272
Delaware	...	...	...	896	25	62	983
Florida	1,130	707	3,235	...	317	168	5,557
Georgia	1,033	...	2,986	...	63	138	4,220
Idaho	341	144	1,063	...	89	11	1,648
Illinois	2,573	...	6,919	...	323	654	10,469
Indiana	1,784	...	4,385	...	...	195	6,364 (4)
Iowa	1,309	...	4,745	...	357	66	6,477 (4)
Kansas	...	...	...	...	...	...	... (3)
Kentucky	1,011	...	3,314	...	...	...	4,325 (4)

State	Automobiles	Motor-Buses	Trucks, Tractor Trucks, etc.	Type Not Reported	Trailers and Semi-Trailers	Motorcycles	Total Vehicles	
(*Continued from page 64*)								
Louisiana	1,971	32	2,722	...	380	63	5,168	(4)
Maine	630	87	1,370	...	164	31	2,282	
Maryland	...	...	...	...	...	...	...	(3)
Massachusetts	...	...	...	5,700	...	...	5,700	
Michigan	...	...	...	...	...	...	...	(3)
Minnesota	...	...	...	4,790	...	...	4,790	
Mississippi	...	...	...	...	...	...	...	(3)
Missouri	571	...	1,606	...	...	9	2,186	
Montana	...	...	...	2,201	...	...	2,201	(4)
Nebraska	539	52	1,871	...	...	46	2,508	
Nevada	147	25	467	...	48	8	695	
New Hampshire	...	...	...	...	...	...	...	(3)
New Jersey	4,180	...	6,297	...	...	545	11,022	
New Mexico	571	...	340	...	...	41	952	
New York	6,462	1,577	18,044	...	881	1,036	28,000	(4)
North Carolina	...	4,850	...	6,821	...	...	11,671	
North Dakota	...	...	...	699	...	...	699	
Ohio	3,234	7,125	8,409	...	1,125	576	20,469	
Oklahoma	...	...	...	6,719	...	...	6,719	
Oregon	1,672	...	2,399	...	...	...	4,071	
Pennsylvania	5,601	138	12,061	...	463	1,226	19,489	
Rhode Island	492	...	917	...	23	105	1,537	
South Carolina	...	...	...	4,468	...	146	4,614	
South Dakota	227	122	783	...	152	12	1,296	
Tennessee	...	...	...	7,105	...	...	7,105	
Texas	2,350	3,989	9,566	...	1,193	378	17,476	
Utah	332	228	818	...	64	46	1,488	
Vermont	...	...	...	...	...	...	...	(3)
Virginia	2,685	...	2,785	...	165	183	5,818	(4)
Washington	1,644	1,621	3,685	...	336	164	7,450	
West Virginia	1,760	...	3,349	...	148	70	5,327	
Wisconsin	1,232	344	6,970	...	204	360	9,110	
Wyoming	297	...	384	...	57	...	738	
Dist. of Col. (5)	1,265	...	1,101	...	106	94	2,566	
At large	...	...	...	...	...	...	...	
Total	50,284	22,290	117,239	67,656	8,610	8,081	274,160	

Footnotes to the Foregoing Tables

(1) This information was obtained by the Procurement Division, Department of the Treasury, by means of a circular letter addressed to all departments and independent offices.

(2) This information, compiled from reports of state authorities, is incomplete in many cases. Some states give state-owned vehicles only; others exclude from registration certain classes, such as fire apparatus and police vehicles.

(3) Not reported. Included with private and commercial registrations in table State Motor-Vehicle Registrations, 1938.

(4) Includes unknown number of Federal vehicles.

(5) Includes 405 automobiles of the Diplomatic Corps.

(6) Includes 2,314 War Department vehicles operated in military reservations, arsenals, etc., but not distributed to state of domicile.

(*Continued from page 64*)

the inadequacies of present registration practice in the several states. In some instances publicly owned vehicles are included with those privately owned; in others no record is kept of such vehicles at all; and in still others there is no segregation between Federal vehicles and those owned by the states, counties and municipalities. Consequently, the data (applying to state, county and municipal ownership) serve only as an indication of the extent of public vehicle ownership and should not be considered a definite tabulation."

Devouring the Parking Problem

EVERY city has numerous groups actively interested in traffic, safety, automobile storage, facilitated shopping. If the solution of congestion were at all obvious and logical, things would have been done locally long ago. That these things have not been done suggests that too much attention may have been given to the *total* problem and not enough to its several rather separate parts such as:

1. Parking a short time.
2. Parking for 2-3 hours of shopping and pleasure
3. Parking for the business day
4. Parking overnight and by week and month
5. Parking lots and terminals
   (a) run by city
   (b) run by transit company
   (c) run by realtors and merchants.

The first two parts of the problem can be greatly simplified by the installation of parking meters, permitting short-time stops on heavy-traffic streets, and longer-time (shopping and matinee) parking on adjacent streets. All cities operating meters agree that the immediate result is to remove the all-day parker from the metered area, and that to a very large extent these all-day parkers are the merchant and business man and their employees.

The first step then would appear to be to install parking meters where they belong, to give the fluid traffic in the business district an opportunity to justify its presence there by being permitted to use the curb space for the active transaction of business.

The second step would appear to be to point out to the business interests that any secondary congestion, in streets adjacent to the metered streets, may be due to their own cars. If this is found to be the case, then these business interests should themselves devise an all-day parking plan to take care of their cars.

They should finance an engineering survey to find parking space at acceptable cost. Beaver Dam, Wis., and Upper Montclair, N. J., — to name small communities — did this successfully.* Oakland, Calif., a larger city, also did this, with even greater satisfaction, in that the plan takes care of customers' cars as well. The Oakland Downtown Merchants Parking Association was organized in 1929, and now accommodates more than one million cars a year in six stations. The Association consists of 195 stores, banks, newspapers, finance companies and professional men. The cost averages 3.6 cents per car parked.

If the local business men of each city will (1) agree on a figure they are willing to pay to park their own cars, (2) have an engineering study made, and, if an acceptable plan is offered, (3) provide facilities for their own cars, another important step will have been taken in simplifying the total problem, and the remainder of the problem will be much more clearly understood.

It may then be found that nothing else needs to be done, or that the volume of automobile traffic is so great that piecemeal solution is inadequate, and wholesale solution by provision of a parking terminal just outside the present congested district, and permitting no parking within the district, is the logical course to pursue.

Much of the fog that has surrounded the parking problem has been caused by the steaminess of the entire problem. The most volatile elements appear to be curb parking and business men's parking. The elimination of the difficulties connected with these two elements is likely to result in a practical solution of the remainder of the problem, and therefore of the entire parking problem.

*See the July, 1938, and August, 1939, issues of THE AMERICAN CITY.

Long-Term Municipal Budgeting with Periodical Revisions

THE necessity and advantages of long-term financial planning for capital improvements are being increasingly recognized. But as to the length of the term and frequency of revisions, opinions differ. The following excerpts from recent reports and speeches bear on this problem of municipal budgeting.

A report submitted to the Municipal Finance Officers' Association of the United States and Canada, October, 1939, by its Committee on Long-Term Financial Planning points out that "while the budgeting of current municipal expenses is now nearly a universal practice, few cities have taken steps to budget their long-term expenditures for public works and other capital improvements." The report concludes:

> Every city should provide for an officially adopted long-term financial plan for capital improvements. The merit of a long-term financial plan lies in the fact that it tends to provide a stabilized tax rate, and provides for all important improvements embracing the public needs in the way of health, protection of persons and property, education, transportation, etc., in relative degrees of necessity. To be effective, it must provide for the following:
>
> 1. A Master Plan; that is, a plan for control of complete community development
> 2. Some forecasting of local population, economic and social factors
> 3. Consideration as to the immediate and prospective financial status of the municipality or other overlapping governmental units
>
> In financing a program of capital improvements, the pay-as-you-go plan is the most desirable and should be adopted so far as feasible. The cost upon the taxpayers, however, should not become unduly burdensome, and the issuance of bonds is recognized as sometimes being necessary. Consideration should be given in such case, however, to the city's ability to meet the resultant annual debt service charges on these bonds, in addition to current operating costs.
>
> Through the adoption initially of a plan for financing a definite minimum annual cost of outlays from current revenues rather than from the issuance of bonds, the city's annual requirements for debt service would be gradually reduced as bonds were retired; thus with a stabilized tax levy, an additional amount would be available from year to year for financing outlays, until ultimately a complete pay-as-you-go plan would become operative.

To Counteract Depressions

The influence of long-term planning in counteracting depressions is pointed out in a quotation included in this report, from a speech on the subject of the feasibility of stabilizing public expenditures, by William Stanley Parker, former member of the Massachusetts State Planning Board, before the National Conference on Planning, held in Boston in May, 1939.

> A policy of stabilized local expenditures cannot possibly be put into effect without long-term financial planning supplemented by long-term physical planning. . . . With such planning, the important result to be accomplished is to develop a program that will tend to improve the soundness of municipal finances, to provide an automatic prevention of over-spending in boom years and provide reserves that will permit carrying on normal expenditures in poor years. If this is done, the employment provided by municipalities, instead of following the lead of private enterprise as heretofore, will tend to carry on through temporary depressions, thus reducing the extent of the depression and encouraging private enterprise to resume activity.

WPA Offers Aid to Capital Improvement Surveys

Colonel F. C. Harrington, Commissioner, WPA, in a speech on municipal cooperation with the WPA, given before the American Municipal Association on November 2 of this year, urges cities to budget public works:

> Your municipalities are not, like the WPA, officially regarded as temporary affairs, mere emergency set-ups, here today but perhaps gone tomorrow. You confidently expect your cities and towns to be in existence fifty years from now. But how many of your towns and cities carry your planning so far as to set up budgets for capital improvements five or six years ahead?
>
> The setting-up of that kind of budget is not beyond the powers of any American municipality. . . . I need not say how inestimably helpful such long-term plans would be to any governmental agency, such as the WPA, or the other departments of the Federal Works Agency, which are engaged in cooperating with localities in the planning and execution of public improvements.
>
> I earnestly hope that long-term municipal planning will become general throughout the United States within a few years. In the meantime, I can say that we shall be glad to give all the assistance we can to capital improvements surveys in your municipalities.

Demonstration Studies in Seven Cities

In a talk to planning officials at Worcester, Mass., in October, Melvin E. Scheidt, technician of the National Resources Planning Board, gives results of the Board's study of methods of advance programming of capital improvements in cities where such procedure has been in practice, and discusses the Board's demonstration studies of such programming in seven cities scattered over the country:

> The Committee set out to find out precisely how the advance programming of public works could actually be accomplished. . . . Visits were paid to those remarkably few cities which were reported to us as having put such a procedure into practice, and a careful study of the methods employed by them was undertaken. . . .
>
> A certain amount of detail work is involved during the first year in order to provide the necessary factual groundwork upon which to build it. Once this groundwork is established, however, the procedure can be carried on from year to year with comparatively little additional effort.
>
> There are three essential steps required—the development of an inventory of all the capital requirements of the community, together with data relating to the degree of urgency and cost of each, the preparation of a careful analysis of the financial situation of the community in order to estimate the funds which will probably be available for these capital needs, and the establishment of an order of preference or priority with respect to the items comprising the inventory, in order that a schedule of construction related to the funds available may be prepared. . . .
>
> The long-range feature of the program is provided by scheduling the projects to be constructed over a num-

ber of years in the future. It can be safely stated that the raw inventory of needed or desired projects will in practically every case amount to many times the money available for construction, but once these projects are arranged in a logical order of preference, they can be scheduled for construction over a predetermined number of years, in such a way that the funds available will be spent first for those projects most urgently needed.

The period of time most frequently selected is six years, although there is no reason why four, five or seven years could not just as well be adopted. Beyond six or seven years, however, the direction of development of the community, or the items which will by that time seem most important, are so unpredictable that a longer program becomes rather meaningless, and numerous later changes will render the initial efforts useless. . . .

Annual Revisions Urged

The procedure as we have developed it calls only for the first year of this capital budget to be actually adopted. The remaining years are considered as tentative adoptions only, and the procedure calls for the program to be reviewed and brought up to date annually, before further adoptions are made. The schedule is advanced one year at each annual review, however, so that there is always on file a carefully reviewed six-year program available for use in determining the general direction of development of the city.

This element of annual review and advancement of the long-range program is an interesting and valuable concept in the field of public planning and budgeting, and is, we believe, the thing which makes the long-range programming procedure workable. . . . We cannot foresee too clearly what the future will bring. Social, economic, and political developments, technological changes, emergencies or natural catastrophies, even changing popular customs, all have their effect upon the direction and form of growth of our cities. A plan, to be workable, must allow for these factors. . . .

The basic elements of the programming procedure itself are pretty much the same everywhere. It should be obvious, however, that the same procedure or internal organization would not be applicable to every type of city. Local traditions, political procedures, city structures, even personalities, all play an important part in determining the organization or method of procedure which should be adopted by any given city. In order to understand the several elements which must be considered in determining how programming should be done in a particular type of city, the Public Works Committee has, in cooperation with the cities involved, established seven demonstration studies in cities widely scattered throughout the United States — Winchester, Mass.; Nashville, Tenn.; Kalamazoo, Mich.; Dallas, Texas; Fargo, N. Dak.; Spokane, Wash.; Sacramento, Calif. These are separated not only in a geographical sense, but also with respect to internal organization, nature and size. They were also selected on the basis of willingness to cooperate in the program. When the studies are completed, they will therefore provide us with . . . a fairly good understanding of the several ways in which programming can be undertaken by different kinds of cities. . . .

Our immediate objective . . . is to develop, out of the studies now being conducted in the cities, a manual of procedure which will be of general value to cities throughout the country. This manual will be printed and available for wide distribution.

Business Regulation by Cities

Consumer Protection That Helps Honest Merchants

By GEORGE M. ROBERTS

Superintendent, Weights, Measures, and Markets, District of Columbia

AN important problem, much neglected by municipal governments, is the fair and just regulation of business, especially of those concerns engaged in the sale and distribution of foods, fuels, wearing apparel and other basic necessities. It is a problem which directly affects the pocketbook of every city resident, and either directly or indirectly affects almost every kind of business. It is recognized as of great importance by economists, by outstanding authorities on municipal government, and by business leaders generally.

Regulation is usually based upon the hypothesis that it is for the protection of consumers against deceptive practices, such as sales by short weight, short measure, false or misleading advertising, misrepresentation as to quality or grade, and other unscrupulous devices employed by some persons engaged in trade. But protection of consumers is not by any means the only reason for business regulation through licensing, weights and measures administration, regulation of advertising to prevent misrepresentation of quality and other questionable practices. One of the principal benefits derived from the proper municipal regulation of the kinds indicated is the protection accorded honestly conducted business establishments against unfair and unscrupulous competition. This fact is now recognized by business leaders, who in some cities are demanding that regulatory ordinances be passed and are wholeheartedly cooperating with municipal officials to that end.

The most formidable weapon in the hands of municipal governments for suppression of unethical and fraudulent business practices is the power to license, which includes, of course, the power of revocation for adequate cause, and the power to deny a license to one of proven bad reputation.

Too often, however, licensing is looked upon only as a source of revenue to the city, and licenses are issued without restriction and without inquiry as to the reputation of the applicant so long as he is willing to pay the fee, rather than using the power to license only those who may be trusted to deal honorably with the public.

Disjointed Administration Unsound

Failure to place under one administrative subdivision all municipal functions relating to standards of business performance is responsible for many abuses. In the District of Columbia (which comprises only the city of Washington) the situation is, to some extent at least, typical of the situation in a considerable number of other cities studied. Here the weights and measures law, a comprehensive statute containing many regulatory provisions involving sales of such basic necessities as meats, fish, oysters, bread, ice, fuel, fruits and vegetables, is under administrative direction of the Superintendent of Weights, Measures, and Markets. Licenses for all mercantile and other business establishments are issued by an entirely separate department,

That's what street officials like in Adams Heavy-Duty Motor Graders. Power to go through and finish any job —flexibility of blade adjustments to suit all conditions—wide range of working speeds with high travel speed to jump from one job to another—control that is speedy and accurate. These machines meet every demand from high-speed maintenance down to heavy scarifying, oil mix and construction work. Available with 62½-hp. Diesel engine or 66½-hp. gasoline engine . . . Smaller models available with 45½-hp. and 22½-hp. engines. Ask your local Adams representative for demonstration. If you do not know his name, address J. D. Adams Company, Indianapolis, Ind.

★ ADAMS *Heavy-Duty* MOTOR GRADERS ★

Inspections to determine whether a proper license has been obtained are made by police. No official is charged with administrative and investigational duties necessary for enforcement of the law prohibiting false and misleading advertising. Prosecutions for violations of the weights and measures law and of the license law are conducted by the Corporation Counsel, a municipal officer, but prosecutions for offenses arising under the law against false and misleading advertising applying only to the District of Columbia are conducted by the United States District Attorney, an officer of the Federal Department of Justice.

Under such a disjointed system of administration of laws relating to the same general subject, that of business regulation and standards of business performance, many abuses detrimental to honorably conducted businesses, and to citizens generally, inevitably grow up. Official responsibility is not fixed and, as a consequence, the great bulk of population of the city suffers. Such lack of systematic administration in dealing with a subject of so great public importance is fundamentally unsound. The unscrupulous minority, always watchful for a means of evading corrective laws, promptly seize every opportunity afforded by lack of administrative cohesion in such matters.

For the purpose of abating many practices detrimental alike to honorably conducted business establishments through unscrupulous competition and to consumers through practices invented for fraudulent purposes, I have, after consultation with men who have attained eminence in the field of municipal government and with local business leaders, prepared and have presented to the Board of Commissioners of the District of Columbia for consideration a proposal for legislation by Congress to establish within the municipal government a department to be designated the Department of Business Standards.

Municipal Department of Business Standards Proposed

The provisions of the proposal for legislation which I have presented are as follows:

Sec. 1. Hereafter the Department of Weights, Measures, and Markets shall be known as the Department of Business Standards, and the title of the Superintendent of Weights, Measures, and Markets shall be Director of Business Standards.

Functions of the Department.—The functions of the Department of Business Standards, except as otherwise expressly provided, shall comprise all functions of the District in relation to the administration of laws and regulations affecting the operation of mercantile and manufacturing business within the District of Columbia, and all laws and regulations relating to standards of performance in connection with the sale and distribution of commodities of merchandise of every kind.

Sec. 2. *Transfer of Functions.*—All such functions as are described in the next preceding section heretofore exercised by any agency are hereby transferred to and vested in the Department of Business Standards. Specifically, the functions so transferred and vested except as otherwise expressly provided, shall include by way of extension and not of limitation:

Administration of the weights and measures law, including laws and regulations to insure quality of business performance.

Administration of the law relating to business licenses and regulations thereunder, including the power of revocation.

Administration of the law to prohibit false and fraudulent advertising.

Administration of laws and regulations relating to sales of gasoline and other motor fuels.

Administration of regulations governing "closing-out sales."

Administration of regulations governing dealers in used automobiles.

Supervision of public markets.

Sec. 3. *Organization of the Department.*—The Department of Business Standards shall consist of the Director of Business Standards and such divisions as may be provided in accordance with law.

It is believed that the plan proposed will place the District of Columbia in the front rank among municipalities handling the subject of business standards and regulation in an intelligent way. It will simplify administrative action, expedite the transaction of public business, dispense with annoying red tape; will correlate into one department of the municipal government related functions; will make available at one office all necessary information needed by owners of business establishments; and will operate generally to the public benefit and convenience. The plan, recognized authorities believe, is one calculated to gain the confidence, respect, and cooperation of business men and the general public.

Budget-Balancing Every Night

To the Editor of THE AMERICAN CITY:

Your October issue carried an article on Lewisburg, Tenn., balancing its budget every night before bedtime. Lewisburg has a population of 3,112, while the borough of Girard, Pa., has only 1,800, but our budget is also always balanced.

Lewisburg did not say what the cost to the taxpayer was in borough taxes, which is quite an item in balancing a budget. The borough of Girard does not have any tax for current operation expense and only 5 mills for debt service. During the years 1937 and 1938 we installed diesel engine equipment for a power plant at a cost of $75,022.75 and issued only $46,000 of bonds, $10,000 of which have already been paid. Our distribution is set up on the books at $30,406.60 and is all clear. Our water system is valued at $62,199.91 and is clear. In sewer construction the greater part is assessed to the property, but the borough has to stand part, which is on our books at $25,687.12 and all clear. A PWA project was completed this summer on the construction of a disposal plant, the borough portion of which was $31,969.91 and against which there is only $15,000 indebtedness. So far this year we have spent $11,570.06 on street widening, sidewalk repair and some black top pavement, all of which was paid from cash on hand. We have a low light rate, low water rate, low tax rate, low valuation, and our Mayor and Council do not receive any pay.

G. H. COVEY,
Secretary, Borough of Girard.

Changes at Airport, San Antonio

ON PAGE 61 of the September issue of THE AMERICAN CITY appeared an article on Stinson Field, the municipal airport at San Antonio, Texas, under the title "Developing a Texas Airport." We are informed by J. Walter Feigenbaum, Assistant City Attorney at San Antonio, that since the new administration has taken office in San Antonio the method of operations at Stinson Field has been considerably changed.

The present city administration, composed of Mayor Maury Maverick and Commissioners Hein, Lipscomb and Davis, who are newly elected officers, and Commissioner Steffler, who was reelected to his office, took over on June 1, 1939, and at that time discontinued private operation of Stinson Field. The lease of Long & Harman, lessees during past years, terminated on May 31 and was not renewed.

Since June 1 and covering a period through August 31, the net operating profit of the city of San Antonio has been approximately $2,700. This represents a sum equal to the total amount received by the city during the fiscal year from June 1, 1938, through May 31, 1939, from the lessees of the field, according to Mr. Feigenbaum.

The city is continuing to make capital improvements in the field, and since June 1 has completed the paving of runways 1 and 4, as well as the taxi strips, with asphalt surface treatment.

ARRESTS JUMPED 80% IN FIRST YEAR WITH POLICE RADIO

Nashua, N. H., Police cut 60% off time for responding to alarms when Western Electric Police Radio joined force.

AND THE NASHUA POLICE DID!

A man came out of a Nashua store just in time to see his car being driven off. He telephoned the Police. The alarm was broadcast to all cars. The stolen car was recovered and the thief captured before he could drive out of town.

Installed in 1934, Nashua's Western Electric 1-way Police Radio produced immediate results. Average time for responding to alarms dropped from 5 to 2 minutes . . . about $10,000 worth of stolen property has been recovered each year . . . and there has been a sharp decrease in crime.

To still better cover Nashua's 32.2 square miles, equipment now is being converted into 2-way by adding transmitters in the 5 patrol cars and a receiver at headquarters. Nashua's transmitter also serves two neighboring municipalities.

Western Electric Police Radio today is giving added protection to 45 million people in small towns, large cities, entire states. No matter what area you have to cover, there's Western Electric equipment to help you do it better. For details, write Graybar Electric Co., Graybar Building, New York City.

Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR *Electric Co.* *In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT

Talking It Over with the Taxpayer

(Continued from page 37)

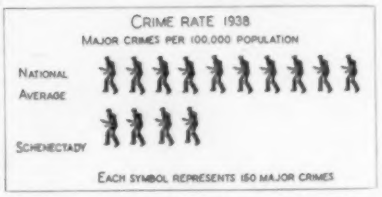
What more vitally affects the citizen than his city government? What would interest him more, if he understood what it meant to him, and what his responsibility is for it? What the municipal report must do is to show the citizen where and how government touches his vital interests and well-being. It must be written from his point of view, describe government at the end where it touches him.

This means that government activities will *not* be most effectively described as the municipal official sees them. The average citizen will be less interested in the number of maps that the city planning commission is making than in their relationship to his efficiency and well-being; more interested in the reduction of disease in his town than the number of hospital beds; in the purity and adequacy of the water supply than the number of feet of water pipe laid or the organization of the water department. The best reports are not mere departmental accounts of routine activities, but discuss with the citizen the functions, problems and policies of his government. The report of the Borough of Manhattan has almost eliminated departmental lines, dividing its subject matter into major accomplishments and general functions of government.

The report of Rochester, N. Y., is an example of a report that is successful in addressing the citizen from his point of view. It explains each activity of the government and the reason for it, frankly presents problems facing officials, and gives reasons for policies which have been followed. The tone of the report, though dignified, is almost conversational; the citizen is addressed directly; the official is talking over the government of his city with him. New York has succeeded in bringing the complexities of its huge, impersonal government close to the individual citizen, in its report, "New York Advancing," written in an interesting, informal, narrative style. Fort Worth, Texas, devotes several pages to summarizing the citizen's part in government activities during the year. Larchmont and Bronxville, N. Y., and San Jose, Calif., are examples of cities which have portrayed the city's finances simply and non-technically.

Appearance and Design

The general appearance and format —illustrations, cover and binding, type, paper, arrangement—meet the eye of the prospective reader first. If they do not attract his attention, he may never read a word of the report. Many of the reports in recent years have become particularly effective in these respects. They contain many illustrations—photographs, charts and graphs, maps, cartoons. Berkeley, Pasadena and San Diego, Calif.; Portland, Maine, Charlotte, N. C., Cincinnati, Ohio, Milwaukee, Wis., Portland, Ore., Rochester, Schenectady and New York, are examples of reports which make good use of all kinds of illustrations.



SCHENECTADY, N. Y.—*The city proclaims its excellent crime record*

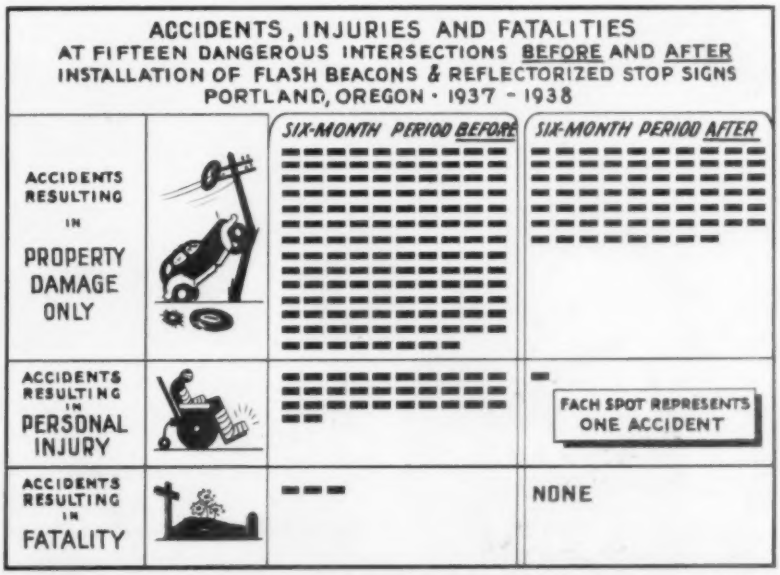
Photographs in these reports are dramatic, show action. At the same time, they tell something, get the story along as much as the text. Instead of a photograph of the new health center, mothers are shown bringing their babies into the baby clinic. Instead of photographs of new street-cleaning equipment, photographs show streets being cleaned with the equipment.

Graphs and charts show trends, progress and comparisons, and are simple and easily understood. Pictographs are increasingly used. Maps frequently show the location of a projected sewer, park, street, etc. Tallahassee encloses a city zoning map in an envelope pasted on the back cover of its report.

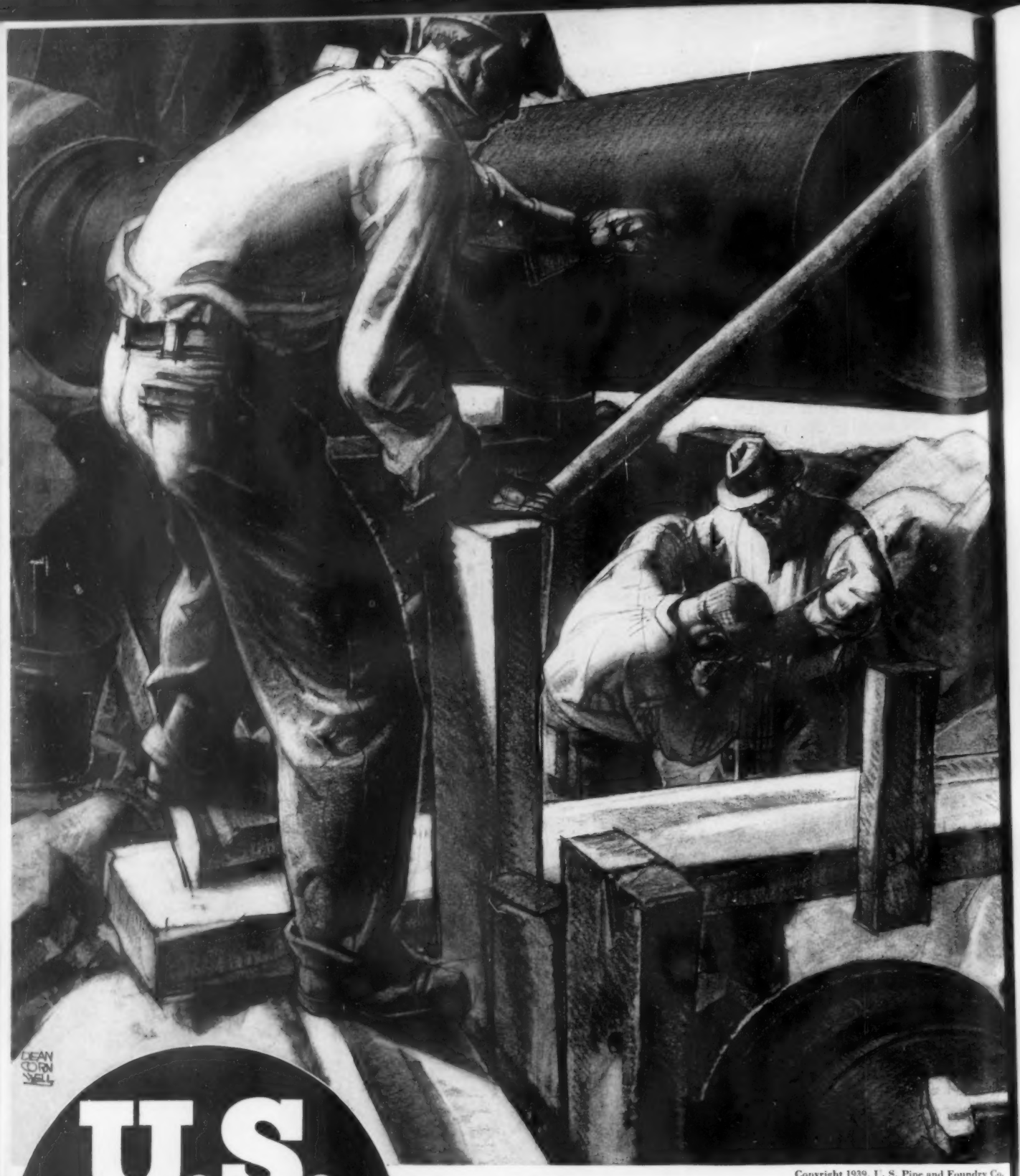
Excellent Details

Paper and type are of such quality as to make the reports easily legible. Covers are attractive, bindings make easy handling. Thought is given to arrangement of the material on the page: so that it is artistic, so that it is easily read. Reading matter is broken up and frequent headings are used. "New York Advancing" has made good use of this device in covering a large mass of material. Emphasis is given important points by putting them in bold type or italics, by the use of frequent sub- or side-headings, or by presenting material in outline form. Berkeley and San Jose, Calif., and Schenectady, N. Y., have successfully used all of these methods. Side-heads in San Diego's report—such as, "Rate Cuts on Utilities," "Permits Set New Records," "Safety Work Is Success"—make news and carry the story along. The appearance of the best reports is unified, attractive, inviting. It leads the reader into the text. A far cry from the drab, statistic-laden tomes of yesteryear!

"Specifications for the Annual Municipal Report," the most complete and up-to-date publication on the subject, outlines in detail the procedure in issuing an annual report, with suggestions for the Preparation of Copy and Publication, and the Layout and Design. It also describes under Content and Method of Presentation, just what government activities should be covered in the report, how most effectively to present them, and the best units of measurement, in each case, for showing results and indicating progress. The manual includes numerous illustrations, taken from some of the best recent reports, showing how they have handled various aspects.


ACCIDENTS, INJURIES AND FATALITIES
AT FIFTEEN DANGEROUS INTERSECTIONS BEFORE AND AFTER
INSTALLATION OF FLASH BEACONS & REFLECTORIZED STOP SIGNS
PORTLAND, OREGON · 1937 - 1938
SIX-MONTH PERIOD BEFORE
SIX-MONTH PERIOD AFTER
ACCIDENTS RESULTING IN PROPERTY DAMAGE ONLY
ACCIDENTS RESULTING IN PERSONAL INJURY
EACH SPOT REPRESENTS ONE ACCIDENT
ACCIDENTS RESULTING IN FATALITY
NONE

PORTLAND, ORE.—*Benefits from equipment bought with taxpayers' money graphically shown*



U.S. cast iron PIPE

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FOR prompt and economical deliveries by water, rail, or truck we carry stocks of U. S. Pipe and standard fittings at works or yards in Addyston, (Cincinnati) Ohio, Bessemer and Birmingham, Ala.; Buffalo, N. Y.; Burlington, N. J.; Chattanooga, Tenn.; Cleveland, Ohio; Dallas, Texas; Minneapolis, Minn.; Los Angeles, San Diego and San Francisco, Calif.; and Seattle, Wash. Our service is country-wide—resourceful, competent and reliable.

U. S. PIPE AND FOUNDRY CO. General offices: Burlington, N. J.

Plants and Sales Offices Throughout the U. S. A.

Makers of centrifugally or pit cast pipe for water, gas, sewerage, drainage and industrial services.

Power from Sludge Gas

(Continued from page 46)

duction of gas is about 65,000 cubic feet a day, which is average for domestic sewage from a community of about 61,000 population.

Sludge Disposal

The original installation in the plant includes a pair of Oliver vacuum sludge filters 3 feet in diameter and 6 feet long, with provision for conditioning the sludge with lime and ferric chloride prior to filtering. These are installed in the main control building at the front but are not used at present. The size of filter installed would require operation daily and necessitate additional labor at the plant.

Now the sludge is being disposed of by filling around the plant, running it into trenches in the cinder and rubbish fill which constitutes the ground surrounding the plant, for this was formerly reclaimed from the river by continuous filling with city rubbish. As the material drains well, the sludge is easily disposed of. There are also a couple of small drying beds which the Superintendent has devised to dry sludge so that there will be some available for fertilizing the grass and shrubbery about the plant.

The Power Plant and Accessory Equipment

A Climax Blue Streak sludge-gas engine with 6 cylinders, developing 75 hp, drives a F-M 63-kva generator and exciter, providing about 200 kwh per day, which is all the electric power needed at present at the plant for the operation of all equipment and for lighting. An average of 35,000 cubic feet of sludge gas of 700 Btu per cubic foot is used daily by the gas engine. A connection is available at the plant for the use of city power if needed.

City water, which is used for water seals for the sludge pumps and for other service where it comes in contact with the sewage, is carefully handled to prevent any possibility of cross-connections. The city water is delivered into an open tank, and a F-M 1-inch pump driven by a 3-hp G-E motor delivers the water to a pressure tank which is maintained automatically between 20 and 40 pounds pressure, and from this the water is drawn for the seals and other services except the house service.

Operating Results

The new sewage-treatment plant at Davenport operates well within the required figures for primary treatment plants of this type. The average figures for May, 1939, covering suspended solids, total solids and BOD are as follows:

	Raw Sewage	Effluent
Suspended solids	464 ppm	141 ppm
Total solids	1,104 ppm	779 ppm
BOD	342 ppm	212 ppm

The present primary sewage-treatment plant at Davenport was designed for the city by Consoer, Townsend & Quinlan of Chicago, Ill., and was placed in operation in September, 1938. It is operated under the direction of Ralph Graham, Superintendent of Public Works, with John Strelow as Superintendent in Charge of Operation.

Water-Softening Plant, Elkhorn, Wis.

(Continued from page 51)

while the final water from the new plant runs from 8.2 to 8.4. The small amount of iron in the well water practically disappears in the treatment.

The designs for the new water-softening plant at Elkhorn were prepared by Mead, Ward & Hunt, consulting engineers, Madison, Wis., using complete Permutit automatic controls for the operation of the plant. The plant was tuned up and placed in operation by G. Gilbertson for the Permutit Company of New York. Neal B. Thayer is Superintendent, Water and Light Department, Elkhorn, in charge of the operation of the plant. Built at a total cost of $55,700, the plant construction cost to the city was reduced by a 45 per cent grant from PWA.

Annual Award in the Field of Public Finance

A FUND of $1,000, presented by the city of Louisville, Ky., to the Municipal Finance Officers' Association of the United States and Canada, will maintain an annual award to be given to the public finance officer who during the year has made the greatest contribution, in some matter of finance or accounting, to the governmental agency for which he works. The Association will appoint a committee in the near future to decide exactly on what basis the award is to be made, and another committee will choose the recipient.

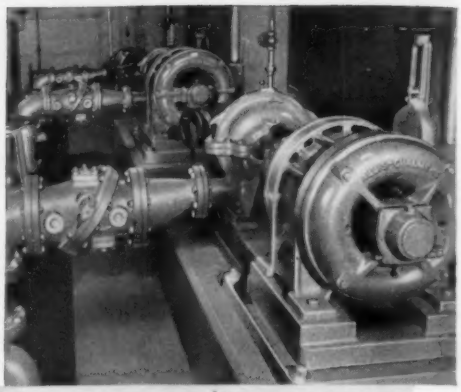
The development of new systems of budget control, the reorganization of accounting systems, the accomplishment of difficult refunding operations, and leadership in general financial reorganization, are services which may receive nation-wide recognition through the Louisville award. It is expected that the award will be in the form of a plaque or medal, to be presented each year at the annual conference of the Association.

The donation of the fund by the city of Louisville was announced at the recent annual conference of the Association in San Francisco by John Lindsay, Louisville Director of Finance, on behalf of Mayor Joseph D. Scholtz. The gift was accepted with a vote of thanks by the Association and its Executive Committee.

The terms of the award do not restrict it to municipal finance officers. It may be given to finance officers of agencies of the Federal, state or county governments, or of governmental institutions such as boards of education or special districts.

. . . HOW A MICHIGAN CITY GOT MORE WATER AT LESS COST!

Read How Allis-Chalmers Pumps Solved a Serious Problem at Marysville, Michigan . . . Provided Enough Capacity for Years to Come . . . At a Pumping Cost of Only a Little More Than 1½c Per 1000 Gallons! Find Out How You Can Solve Your Pumping Problems . . . with the Equipment That Pays for Itself!



TO ATTRACT NEW industries, a city needs plenty of water . . . that's why Mayor Edward C. Guck of Marysville, Michigan, is proud of their new pumping plant—designed by Pate & Hirn . . . with Allis-Chalmers pumps giving low costs and big capacity for future growth!

How to increase pumping capacity without increasing pumping costs . . . that's the problem of many growing industrial towns! That was the problem the city of Marysville, Michigan, met and solved . . . with Allis-Chalmers Centrifugal Pumps!

Formerly, pumping costs in Marysville were excessive . . . and covered only booster pumping of limited supplies of raw water. Then, suddenly the picture changed—a large corporation established a new plant in the city. That's when the city of Marysville knew they had to do something to provide more water . . . economically!

More water at less cost is what they wanted . . . and what they got! For when they built their new plant in 1938, they installed new high-speed, high efficiency Allis-Chalmers Centrifugal Pumps on the job. And when they figured up their costs, they found they had a sensationally new low cost of $0.0156 per 1,000 gallons, a figure any city can be proud of!

Allis-Chalmers Pumps Cut Costs!

Today, Marysville boasts a completely modern plant, allowing an extremely wide margin for fire protection and future growth . . . strong appeals to attract new industries . . . and it costs them hardly more than 1½c per 1,000 gallons. That's important news to every city or plant that wants more water capacity at less cost!

If you want to increase your pumping capacity . . . decrease your pumping costs—learn how you can do it with Allis-Chalmers Centrifugal Pumps . . . the equipment that is helping hundreds of municipalities and industrial plants to show amazingly low costs for water handling!

Get the story of the Equipment that Pays for Itself! Write to Allis-Chalmers. Or better yet — there's a trained pump man in the Allis-Chalmers district office near you whose job it is to help solve your pumping problems . . . get better pumping efficiencies for you . . . cut your costs! Why not call him in today for a study of your problems?

1022

CENTRIFUGAL PUMP DIVISION
ALLIS-CHALMERS
MILWAUKEE·WISCONSIN

SINGLE-STAGE DOUBLE-SUCTION PUMPS • CLOSE-COUPLED SINGLE-STAGE SSUnit PUMPS • MULTI-STAGE PUMPS • PAPER STOCK PUMPS • MIXED FLOW AND AXIAL FLOW PUMPS • AND SPECIAL DESIGNS FOR UNUSUAL APPLICATIONS

Water Rates and Service Charges

1939—Part X

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Lebanon, N. H.

Present population	7,000
Population served	5,500
Number of active services	1,032
" " meters	850
" " hydrants	112
Miles of water main	23

Water bills are due and payable in the Water Commissioner's office quarterly on February, May, August and November 1 of each year, and if not paid within 15 days after they become due, the service may be cut off. The quarterly rates are:

First	700 cu. ft.	$2.50
Next	700 " "	.24 per 100 cu. ft.
"	700 " "	.19 " " " "
Over	2,100 " "	.12 " " " "

The minimum charge is $2.50 per quarter.

There is no charge for the installation of water services. The Water Department completes the service from the main to the property line and also owns and controls the meter inside the building. Customers must keep their own water pipes and all fixtures connected in good repair and protected from frost, at their own expense. They further have to provide the stop and waste cock located inside the building and arrange the water pipes within the structure so that water can be drawn from them if in danger of freezing.

As this is a municipal water works operated within a fire precinct, no charge is made for any service that will tend to lower the fire hazards, which we believe to be an inducement for the industries of this town to install fire hydrants and sprinkler systems for fire protection.

HARRY MANSON,
Superintendent, Lebanon Water Works.

Keyser, W. Va.

Present population	6,248
Population served	6,350
Number of active services	1,460
" " meters	1,501
" " hydrants	78
Miles of water main	30

The output charge, or charges for water actually used, in Keyser, W. Va., are:

First	15,000 gals.	$.20 per 1,000 gals.
Next	150,000 "	.15 " " "
Over	165,000 "	.06 " " "

In addition to the output charge there is a quarterly charge for meter service, as follows:

⅝"	$1.50 per quarter
¾"	3.00 " "
1"	6.25 " "
1½"	12.50 " "
2"	25.00 " "
3"	50.00 " "
4"	100.00 " "
6"	150.00 " "

Services from the mains to the curb are installed by the water works at the expense of the city. Copper tubing is used exclusively, with a minimum size of ½" tubing.

There is no charge for public or private fire hydrants, or for automatic sprinkler service connections.

FRED A. PURGITT,
Superintendent of Filtration Plant.

Monroe, Mich.

Present population	18,000
Population served	18,000
Number of active services	4,548
" " meters	4,548
" " hydrants	525
Miles of water main	57

The water rates in Monroe are as follows, with the minimum bi-monthly bills listed below:

First	400 cu. ft.	$1.188
Next	600 " "	2.34 per 1,000 cu. ft.
	8,000 " "	1.944 " " " "
	85,000 " "	1.458 " " " "
Over	94,000 " "	.972 " " " "

	Minimum Bi-Monthly Bills	
⅝" meter	$1.19	
¾" "	1.78	
1" "	2.97	
1¼" "	4.48	
1½" "	5.27	
2" "	7.56	
3" "	15.12	
4" "	22.68	$2.43 for fire meter
6" "	37.80	3.62 " " "
8" "		5.40 " " "

A reduction of 10% of the gross bill is made on all accounts if paid on or before the due date. Water rates outside the city limits are 1⅔ times the rates inside the city.

The Department requires the applicant for a new service to deposit $7.00 if he is a tenant or to furnish a guarantee by the owner of the building he occupies. The Water Department furnishes and installs all water services from the main up to and including the meter, using copper pipe as standard and permitting the use of no other material. The customer pays a flat price for the service installation, depending on the width of the street and size of the service. For instance, the charge is $20.16 for a ¾-inch service on a street between 51 and 60 feet. This pipe carries the service to the curb stop located 1 foot inside the property line. A flat price of 50c per foot is charged from this point to the meter, depending upon the set-back of the house and the location of the meter. In this way the property owner is not penalized because of unusual ground conditions. Larger services are installed at actual cost.

The Water Department charges the city $20,000 per year for fire protection service. No charge has been made for the connection of private hydrants where the service is metered.

ROBERT E. NEIS,
City Director.

Brenham, Texas

Present population	6,000
Population served	6,000
Number of active services	1,303
" " meters	1,207
" " hydrants	164
Miles of water main	18

The water rates based on monthly consumption in Brenham are:

First	4,000 gals.	$1.25 minimum
4,000 to	10,000 "	.30 per 1,000 gals.
10,000 "	25,000 "	.25 " " "
25,000 "	50,000 "	.22 " " "
All over	50,000 "	.20 " " "

Application for water services must be made at the office of the City Clerk. A charge of $8.00 is made for a ¾" service line from the main to the curb. The city furnishes copper pipe and all fittings, including a meter and meter box. If the meter is larger than ¾", it and the pipe and fittings must be paid for by the consumer.

No hydrant charges are made to the city for the installation, maintenance and water service for public fire hydrants. A monthly charge is made as a standby charge for private fire protection for any size service from 2" to 8". This charge of $1.50 per month covers both sprinkler heads and hydrants.

H. T. ELDRED,
Superintendent, Brenham Water Works.

Santa Rosa, Calif.

Present population	13,500
Population served	17,000
Number of active services	4,000
" " meters	4,000
" " hydrants	265
Miles of water main	40

The citizens of Santa Rosa are furnished 5,000 gals. of water per month free in accordance with the city charter. The charge for water used by one service

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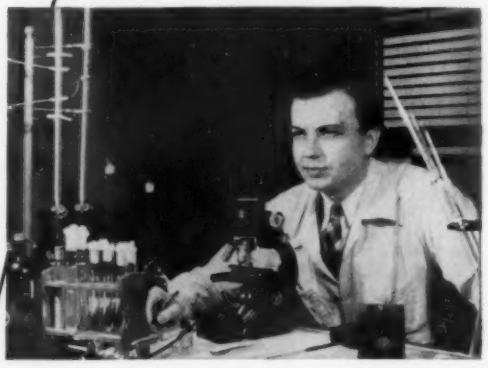
. . . Says Gerard S. Noerenberg, Chemist, Wilmette Filtration Plant

"We have been users of your Chlorine for about nine years with an intermediate gap when we used another source of supply. This experience (sticky valves) fully confirmed our belief that Mathieson service is both dependable and advantageous to us. Your product has been uniformly good. There has been no trouble with sticky valves.

"We also use HTH in its convenient packaged form, in a number of ways. It is used as a stand-by emergency source of Chlorine in our Filtration Plant, to sterilize all new mains and reservoirs and as a health help in the prevention of Athlete's Foot in the Waterworks locker room. The public bathing beach has been using HTH for years in the showers and locker rooms. In the outlying districts, HTH is used in the sterilization of wells.

"Not the least of advantages in using your products has been the friendly, constant and able assistance given us by your representative, who stops in on us frequently."

Gerard S. Noerenberg, Chemist, Wilmette Filtration Plant.



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Mathieson Chlorine, coupled with HTH for special and emergency jobs that so often arise, make a team hard to beat for dependable sanitation service.

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above this amount is the same as for commercial services, which are as follows:

Up to and including 4,000 gals. $1.00 per month minimum charge
First 10,000 gals. $.25 per 1,000 gals. or fraction thereof
Second 10,000 gals. $.20 per 1,000 gals. or fraction thereof
Over 20,000 gals. $.15 per 1,000 gals. or fraction thereof
Fraction of 1,000 gals. means that anything under 500 gals. is dropped; 500 gals. or over is carried as a straight 1,000 gals.

A uniform charge of $30 is made for the installation of water service when application is made for such service by a property owner or lessee of residential or business property.

No charge is made to the city for the installation and care of public fire hydrants, but a charge of $3.00 per month is made as a standby charge to all private fire hydrants. No charge is made for sprinkler heads installed for private fire protection.

A. P. NOYES,
City Engineer.

Henryetta, Okla.

Present population	7,690
Population served	9,000
Number of active services	1,900
" " meters	1,900
" " hydrants	209
Miles of water main	35

The water rates charged in the city of Henryetta are as follows:

First	2,000 gals.	$1.00 (minimum charge)
Next	3,000 "	.50 per 1,000 gals.
"	15,000 "	.40 " " "
"	20,000 "	.35 " " "
"	20,000 "	.30 " " "
"	20,000 "	.25 " " "
"	20,000 "	.20 " " "
"	50,000 "	.15 " " "
"	50,000 "	.14 " " "
"	100,000 "	.13 " " "
"	500,000 "	.12 " " "
"	700,000 "	.11 " " "
All over	1,500,000 "	.10 " " "

Persons desiring to take water from the Henryetta Water Works System sign an application with the Water Department on a special form on which they record the name, description of the lot, block and addition, and the official house number of the premises, and state fully all the purposes for which water is to be used, the number of families to be supplied, and the number and kind of fixtures. The applicant files the form with the City Clerk, with the fees for the installation of the water service and meter deposit.

The meter deposit is $9.00 for ⅝" or ¾" meters, and larger meters are bought outright by the consumer. Each meter deposit bears interest at the rate of 4%, beginning at the end of the first six months' service. The total sum, including interest, is refunded when service is discontinued, providing there have been no delinquencies.

The fees for the installation of water services are $12.00 for a ¾" or ⅝" connection, plus an additional charge of $5.00 for each curb cock and box required. Where a service must be extended along a street on which there is no main, the estimated cost of material and labor for the installation of the service must be paid to the City Clerk before work is started. Any excess payment is returned to the applicant.

When water is shut off from any premises for a violation of the provisions of the Water Department Ordinance, water is not turned on again until all delinquent and unpaid charges, together with a charge of $2.00 for shutting off and turning on the water, are paid in full.

There are no hydrant rental charges and no charges for sprinkler heads installed on services for private fire protection.

H. M. LARUE,
Superintendent, Water Department.

Santa Cruz, Calif.

Present population	20,000
Population served	25,000
Number of active services	7,500
" " meters	7,145
" " hydrants	548
Miles of water main	100

The monthly rates for water consumed through meters are:

⅝" meter	$1.00	for first 500 ft. or less
¾" "	1.25	" " " " "
1" "	1.50	" " " " "
1½" "	2.00	" " " " "
2" "	2.50	" " " " "
3" "	4.00	" " " " "
4" "	5.50	" " " " "
6" "	7.50	" " " " "
Each additional 100 ft. and up to 2,000 ft	$ .10	per 100 ft.
All above 2,000 ft. and up to 3,000 ft	.07	" " "
All above 3,000 ft. and up to 4,000 ft	.06	" " "
All above 4,000 ft	.05	" " "

All meters, unless authorized by the Superintendent, remain the property of the city and are not purchased by consumers. A charge of $2.00 is made for the installation and $1.00 for the removal of a temporary meter installation; that is, if used for three months or less. When an application for service is made and the meter is installed, a deposit of $3.00 is collected, which is returned when the premises are vacated if all rates have been paid.

Outside the city of Santa Cruz the monthly rates for water consumed through meters are:

⅝" meter	$1.25	for first 500 ft. or less
¾" "	1.50	" " " " "
1" "	1.75	" " " " "
1½" "	2.25	" " " " "
2" "	2.75	" " " " "
3" "	4.25	" " " " "
4" "	5.75	" " " " "
6" "	7.75	" " " " "
Each additional 100 ft. and up to 2,000 ft	$ .10	per 100 ft.
All above 2,000 ft. and up to 20,000 ft	.09	" " "
All above 20,000 ft. and up to 50,000 ft	.07	" " "
All above 50,000 ft. and up to 80,000 ft	.06	" " "
All above 80,000 ft. gravity flow	.05	

When the accuracy of a water meter is questioned and the consumer wishes it tested, he must make a deposit with the City Water Department, depending on the size of meter, as follows:

Testing	½" meter	$1.00
"	¾" "	1.00
"	1" "	1.50
"	1½" "	1.50
"	2" "	2.00
"	3" "	3.00
"	4" "	4.00
"	6" "	5.00

The Water Department bears the entire expense of the test and returns the deposit if the meter shows an error of 3% or more against the consumer. Otherwise the consumer pays the charge listed.

The application for water service requires that the consumer give a complete description of the lot, block and addition or official house number of the premises and sign the application as a formal contract to pay such rates, penalties and charges as may be made. The fees for the installation of water services by the Water Department are:

¾" service	$15.00
1" "	20.00
1½" "	30.00
2" "	40.00

For services larger than 2", or where it is necessary to open a paved street, the actual cost of labor and material in laying such a service and replacing the pavement, plus 10% overhead, is charged to the consumer. In these cases the cost of labor and material is estimated by the Superintendent in advance and that sum deposited with the City Water Department by the applicant. The refund is made if an excess deposit has been required.

In case of any violation of the contract or for non-payment of water bills within 5 days of the time of the serving of a notice, the water is turned off from the premises and a $2.00 penalty added to existing charges.

The charge for fire protection is $1.00 per inch of service per month and there is no charge for water actually used in fighting fires. A charge of $1.00 each per hydrant is made to the city.

R. S. TAIT,
Superintendent of Water.

Aurora, Ill.

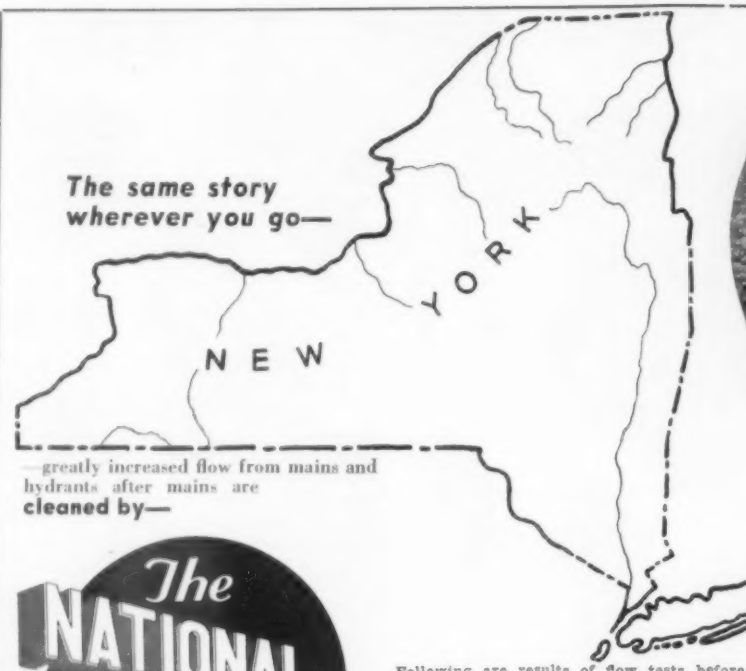
Present population	48,000
Population served	48,000
Number of active services	11,125
" " meters	11,521
" " hydrants	1,095
Miles of water main	133.89

Ordinance No. 2502, passed March 20 and approved March 21, 1939, divides the water consumers of Aurora into three classes. Class 1 covers most of the water consumers and is defined as those not included in Classes 2 or 3. Class 2 includes all water consumers coming under the general description of public institutions, such as schools, churches, parsonages, etc., which are supported mainly by general taxation or voluntary contributions. Class 3 covers persons, firms or corporations which, at the discretion of the City Council, are charged a flat rate for water service.

The rates charged for Class 1 are:

250 cu. ft. or any fractional part thereof, and under 300 cu. ft. per 3 months	$1.50
300 cu. ft per 3 months	1.62
Each 100 cu. ft. in excess of 300 cu. ft., up to 1,500 cu. ft. per 3 months	.24
Each 100 cu. ft. in excess of 1,500 cu. ft., up to 6,500 cu. ft. per 3 months	.18
Each 100 cu. ft. in excess of 6,500 cu. ft., up to 37,500 cu. ft. per 3 months	.14
Each 100 cu. ft. in excess of 37,500 cu. ft., up to 75,000 cu. ft. per 3 months	.11
Each 100 cu. ft. in excess of 75,000 cu. ft., up to 250,000 cu. ft. per 3 months	.09
Each 100 cu. ft. in excess of 250,000 cu. ft. per 3 months	.08

The rates for Class 2 are identical with



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No. Ft. Cleaned	Before Cleaning	After Cleaning
1105	370 g.p.m.	920 g.p.m.
590	0 g.p.m.	552 g.p.m.
1183	720 g.p.m.	970 g.p.m.
1000	494 g.p.m.	722 g.p.m.
1540	0 g.p.m.	716 g.p.m.
1069	187 g.p.m.	662 g.p.m.

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those for Class 1 for the first 300 cu. ft. Thereafter the charge for each 100 cu. ft. in excess of 300 cu. ft. is 8c for each 100 cu. ft.

If a consumer disputes the correctness of a bill or questions the accuracy of the meter, the Director of Public Works will cause a test to be made of the meter as to its accuracy. If it is found that the meter registers a greater or a less amount of water than has actually passed through it, in excess of the allowable variation of 2%, the Water Works Collector is instructed to adjust the error. In no case where water service has been rendered for six months or a portion thereof, is the bill adjusted below the minimum charge set by the ordinance.

An applicant for water service signs an application and pays the cost of the meter in advance. The Director of Public Works orders the main to be tapped and inserts a corporation cock at a cost of $3.50 for each ¾" or 1" tap. The Water & Electrical Department furnishes the sleeves, valves, and valve-boxes, and makes cuts 4" and larger at the actual cost of labor expended and material used in performing the operation.

There are no hydrant rental charges for either public or private hydrants for fire purposes. There is a semi-annual charge of $12.50 for all sprinkler systems of 500 heads or less, and a semi-annual charge of 1½c per head for each six months for each head above 500.

FRED E. STAIB,
Collector, Water & Light Department.

Santa Maria, Calif.

Present population	8,500
Population served	8,500
Number of active services	2,500
" " meters	2,390
" " hydrants	247
Miles of water main	38

The meter rates for water used in Santa Maria are 31½c per 134 cu. ft. for the first 804 cu. ft. used in any one month or fraction of a month, with a minimum charge of $1.90. For all water used over 804 cu. ft. in any one month, the charge is 10c per 134 cu. ft. For water furnished by tank, the charge is 75c per tank of not over 134 cu. ft.

Wherever a meter is installed, the minimum monthly rates are as follows, based on the size of the taps and meters:

⅝" meters	$1.90	⅝" taps	$1.90
¾" "	1.90	¾" "	1.90
1" "	3.40	1" "	3.40
1¼" "	3.90	1¼" "	3.90
1½" "	5.40	1½" "	5.40
2" "	6.90	2" "	6.90
3" "	15.00	3" "	15.00
4" "	40.00	4" "	40.00
		6" "	60.00

The Water Department, in accordance with Ordinance No. 141, keeps an account of all water furnished to the city, estimating the consumption, and then a sum sufficient to equal the cost of water used at the rate of 10c per 134 cu. ft., and $1.00 per month for each fire hydrant, is transferred from the general fund to the Municipal Water Fund.

Each occupancy of a business building, apartment house or dwelling must be separately metered or connected and separately charged, and the water lines within the building must be so arranged by the owner that there can be separate meters or connections for each occupancy except in buildings with plumbing installed prior to the passage of Ordinance 141, December 18, 1933, which may be supplied through one connection and at a minimum charge as follows: apartments of three or more on one account without shut-off service have a minimum charge of $1.25 for each apartment, which entitles the consumer to 529 cu. ft. for each minimum, and all additional water is charged at the rate of 31½c for each 134 cu. ft. up to 804 cu. ft. for each apartment, and 10c for each 134 cu. ft. used thereafter.

Consumers having two or three apartments in addition to the regular service of $1.90 without an independent shut-off are charged $1.25 for each apartment, which entitles the consumer to 804 cu. ft. for the regular service, and 529 cu. ft. for each apartment, additional water being charged at the rate of 10c for each 134 cu. ft.

Up to and including, five auto cabins are billed at $1.90 for water service as a minimum charge. Where there are more than five cabins, there is a charge of 35c for each cabin, which entitles the consumer to 804 cu. ft. of water for the $1.90, and 134 cu. ft. for each 10c additional. Any amount of water in addition to this minimum is charged at the rate of 10c for each 134 cu. ft.

YORK PETERSON,
City Engineer.

San Buenaventura, Calif.

Present population	13,000
Population served	13,000
Number of active services	4,120
" " meters	4,104
" " hydrants	440
Miles of water main	75.5

The water rates of San Buenaventura are divided into quantity rates with minimum monthly charges, inside and outside the city, and irrigation rates. The quantity rates within the city are:

500 cu. ft. or less	$.22 per 100 cu. ft.
501 " " to 1,000 cu. ft	.17 " " " "
1,001 " " " 10,000 " "	.11 " " " "
In excess of 10,000 cu. ft	.09 " " " "

These rates are subject to minimum monthly charges based on the size of the meters as follows:

⅝" meters	$1.10
¾" "	1.40
1" "	1.95
1½" "	2.75
2" "	3.30
3" "	4.40
4" "	5.50

Special irrigation rates, which apply only where the service is through an irrigation meter with no domestic service on the line, are 60c per miner's inch per 24 hours, which is equivalent to 1,728 cu. ft. per 24 hours.

The following rates apply outside the city:

500 cu. ft. or less	$.40 per 100 cu. ft.
501 " " to 1,000 cu. ft	.19 " " " "
1,001 " " " 10,000 " "	.15 " " " "
10,001 " " " 20,000 " "	.13 " " " "
In excess of 20,000 " "	.09 " " " "

Meter rates are due and payable on the 1st day of each month succeeding the month in which the water is used, and are delinquent if not paid on or before the 10th. Where meter service is given, the Municipal Water Department may in its discretion require a reasonable deposit to guarantee payment of the water rate. This deposit is not retained for a longer period than one year. If a consumer fails to pay the amount due to the Water Department, the Department has the right to shut off the service and then makes a charge of $1.00 upon turning on the water again. If an account is not paid on or before the 20th of the month in which it becomes due, it is deemed delinquent and a penalty of 10% with a minimum of 25c is added to the bill. If not paid on or before 20 days thereafter, the water is shut off from the premises and is not turned on again until all arrearages and penalties, together with a charge of $1.00 to cover expenses, are paid.

Any consumer may have the accuracy of the meter through which water is being furnished to his premises examined and tested by the Water Department by making a written application therefor and accompanying the application with a fee of $1.00. Then the Department examines and tests the meter and if it is found to register more than 2% in excess of the actual quantity of water passing through it, the meter is removed and another installed, and the fee of $1.00 is returned to the consumer and his water bill for the current month corrected accordingly. Otherwise the fee of $1.00 is retained by the Department.

Before water is supplied to any person or premises from the mains of the city of San Buenaventura Water Department, the owner must make application on a form provided by the Superintendent of the Department. This application contains a contract on the part of the applicant to pay the stipulated rates at the time and in the manner provided for by ordinance. The applicant having complied with all the requirements of the ordinance, the Water Department connects the property with the mains. All new services must be metered, and the applicant pays the stipulated rates for installation of services at the time of application. These charges include perpetual maintenance of all services, meters and meter boxes installed, all of which remain the property of the city of San Buenaventura. The charges for services on unpaved streets are:

¾" service	$15.00
1" "	30.00
1½" "	50.00
2" "	90.00
3" "	150.00

Where the services require the cutting of the pavement, there is an additional charge of 45 cents per square foot for cutting and replacing the pavement. Services larger than 3" are charged for at the cost of material and labor, plus 10%. These prices include the service connection complete, including meter and meter box set in place, except when meters are required under a sidewalk excavated to

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the curb line, in which case the property owner must construct a cement box for the meter, open on the top side only and of such size and in such location as may be designated by the Superintendent of the Water Department.

Where a permit has been granted for private fire service or sprinkling service connections, its use other than for fire service is not permitted. If this requirement is violated, the service is shut off and is not turned on again until a standard meter of the equivalent size of the service pipe has been installed and paid for, together with the installation charge and a sum equivalent to the monthly minimum for a similar size regular installation covering the entire period. Fire-line meters are read on July 1 and January 1 of each year. There are no charges for public or private fire hydrants used solely for fire services or for sprinkler head installations for fire protection.

C. F. ZAPF,
Superintendent, Municipal Water Department.

Franklin, Mass.

Present population	7,028
Population served	6,500
Number of active services	1,419
" " meters	1,419
" " hydrants	203
Miles of water main	35

Bills for water used for domestic purposes are rendered the first day of April and October of each year. A charge of $5.00 for six months, payable in advance, is made for the use of water in any one tenement or by any one family. This charge entitles the consumer to the use of 1,800 cu. ft. of water during the six months. All excess water used during the previous six months is added to the semi-annual advance charge for the following six months, as follows:

	Per 100 cu. ft
First 1,800 cu. ft. per 6 months	$5.00
Next 5,000 cu. ft. or part thereof	.27
" 7,000 " " " " "	.26
" 10,000 " " " " "	.23
" 12,000 " " " " "	.21
All over 12,000 cu. ft.	.14

The rates for water taken from the high-pressure system for industrial purposes are as follows, and are billed monthly:

Less than 265 ft., per day	$.27	per 100 ft.
265 ft. but less than	280 ft. .26	" " "
280 " " " "	290 " .25	" " "
290 " " " "	300 " .243	" " "
300 " " " "	320 " .234	" " "
320 " " " "	335 " .225	" " "
335 " " " "	350 " .216	" " "
350 " " " "	375 " .207	" " "
375 " " " "	400 " .198	" " "
400 " " " "	530 " .189	" " "
530 " " " "	660 " .18	" " "
660 " " " "	800 " .17	" " "
800 " " " "	930 " .16	" " "
930 " " " "	1070 " .153	" " "
1070 " " " "	1200 " .144	" " "
1200 " " " "	1330 " .135	" " "
1330 " " " "	1460 " .126	" " "
1460 " " " "	1600 " .117	" " "
1600 " " " "	1730 " .108	" " "
1730 " " " "	1860 " .099	" " "
1860 " " " "	4000 " .09	" " "
4000 " " " "	8000 " .086	" " "
8000 " " " "	12650 " .081	" " "
12650 " " " "	20000 " .076	" " "
All over 20000	.072	" " "

The supply of water is discontinued if bills are not paid within 30 days from the date of the bill.

If a customer at any time is dissatisfied with the accuracy of his water meter, the Water Board will test it in the presence of the owner or his agent, but not without a proper witness. If the meter registers in favor of the consumer, a charge of $2.00 is made for removing, testing and resetting the meter. The percentage of error is then added to the last bill. If the meter is found to register in favor of the Water Department, the bill is adjusted and no charges are made for the testing.

When service is desired, the applicant, whether he be a lessee of property or an owner, must sign a special form at the office of the Water Department indicating the location of the service and the purposes for which the water is to be used, as well as the number of tenants and if they can also supply the number of sprinklers and hydrants, and must agree to pay for all construction work required within 30 days from the date of the bill.

There is no charge made for public fire hydrants, but private fire hydrants are billed a standby charge of $35 each per year. The charge for sprinkler heads attached to water services is 10c each per year.

FRED A. DARLING,
Superintendent, Water Department.

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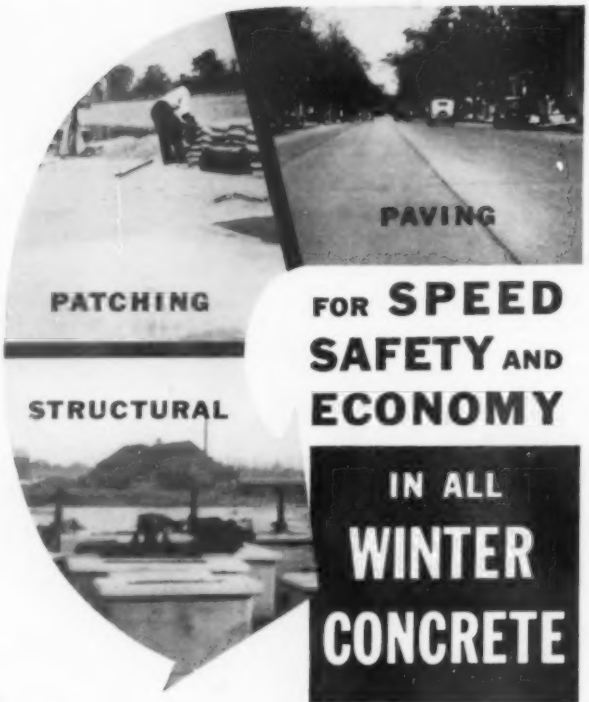
See order blank
on page 93.



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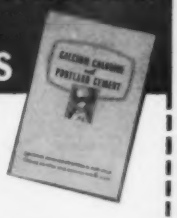

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Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Concord Leads State in City Planning

CONCORD, N. H.—The value of a good planning board to any city cannot be overestimated, and this is especially true of a New England city that finds it necessary to depart from some of its old town vestiges. Concord established by ordinance a Planning Board on April 11, 1938. In the brief history of the Board's existence, the city has done more constructive planning than any other in the state, and is second to none in northern New England.

The Board, consisting of nine members, three of whom are city officials, serves without pay. It established a research planning center in the City Hall, hired an engineering expert and an assistant, and set about its task. The work has progressed very fast owing to the personnel of the Board and staff. The Mayor, the City Engineer and an Alderman are the city's representatives on the Board. Among the other six members are the leading journalist of the city, a prominent attorney, and the Director of the State Planning Commission. It is not surprising that such a board, with the assistance of two technicians, is beginning to show results.

The first task of the Board was to develop a planning program, and the members decided to secure certain basic information on which the program should rest: (1) land use in the city; (2) how the uses are changing; (3) assessed values in comparison to real values; (4) the growth of the city's population; (5) areas showing the greatest development; (6) particular problems of each section of the city; (7) tax-exempt land; (8) traffic and use of streets; (9) areas adequately and inadequately served by police and fire protection; (10) water mains and sewers, school, transportation facilities and other public services; and (11) the capacity of each school, and the extent of its use.

With these data as a basis, a comprehensive city plan is being developed which will show: the best use of land in the city; suggested changes in zoning; a comprehensive street plan; improved recreational facilities; recommendations for the correction of tax delinquency; a city policy on tax-exempt lands; control of new subdivisions; and a plan for the acquisition of necessary public building sites and public lands. This is indeed an ambitious program for any city, but to a New England city that follows its old town boundaries and includes four other more or less independent communities beyond its congested area, a stupendous task is presented.

The entire committee, with the assistance of the planning staff, has set to work energetically, and is gradually making its studies available. On December 31, 1938, the Board published its "Development and Use of Land in Concord." In making this study, two new base maps were developed from the assessor's large-scale maps. These were invaluable in all the planning studies which followed. The planning staff proved itself so capable of carrying on research, that the Mayor and Council have turned to it repeatedly for information on city problems. Space does not allow the recitation of the studies made, but in addition to its general planning activities the staff of the Planning Board has prepared special reports on streets and alleys, population census, vacant lot frontage, park development, storm damages, army air base, city auditorium and certain studies on public works. The reports have been so well prepared that the City Council has asked the Planning Board to publish the annual city report for 1939. It is unfortunate that, owing to the expense it would entail, all these reports could not have been made available to the public.

The remarkable part of the whole program in Concord is that it is well supported by the community and is not regarded as a mere dream, but a plan produced by some of Concord's leading citizens, with the aid of expert assistance, that offers the best solution to the problem of inequities in assessments and inefficient community services, and promises a more beautiful and healthful community in which to live.

Concord is a city of slightly more than 25,000 people and an assessed value of $32,000,000. It has had to conduct its planning activities on a very small budget, operating on less than $5,000 a year. Concord has made such development in putting her house in order that her neighboring cities are beginning to study the way she is doing it.

LASHLEY G. HARVEY,
Executive Secretary, Bureau of Government Research, University of New Hampshire.

The Progress of Canton's Civic Program

CANTON, OHIO.—Several major accomplishments have been realized in this city since the report made in the May, 1937, issue of THE AMERICAN CITY (see page 54). These stand out against a background of the Chamber's continuing and unfinished projects as stated on a 36-item list.

Canton's $2,000,000 park, playground and recreation system is practically complete. The main part of the system extends from south to north through the west section of the city, and one mile beyond the city limits, a total of five miles, ending in a 40-acre arboretum. Along this route are excellent playgrounds, baseball fields, tennis courts, horseshoe courts, picnic grounds, streams in which children can fish, and many forms of leisure-time activity for all ages. In different sections of the southeast and north parts of the city there are individual playgrounds, ball fields, swimming pools and picnic grounds, varying from 3 to 20 acres. Altogether, Canton has 23 parks, playgrounds and boulevards, totaling over 560 acres. Most of this has been built during the last four years with the assistance of Federal funds.

Canton also has a reputation for having one of the best operated recreation departments in the country, furnishing a year-round program for children and adults, utilizing the gymnasiums and school buildings for the winter program. Funds for operation of the Recreation Department come from a special two-tenths mill tax levy voted upon by the community every five years. The fund amounts to approximately $30,000 per year. This levy is state statutory, being submitted through the Board of Education as a special recreational measure.

The Recreation Board consists of five men appointed by the Mayor for a period of five years and is operated as a free and independent unit. Under this arrangement, at least two members of the Recreation Board must be members of the Board of Education.

The new Fawcett Stadium was dedicated and opened for public use last spring. The site was originally a clay pit that had been excavated in the form of a natural amphitheater by an adjacent brick company. It was purchased by the Citizens Committee of

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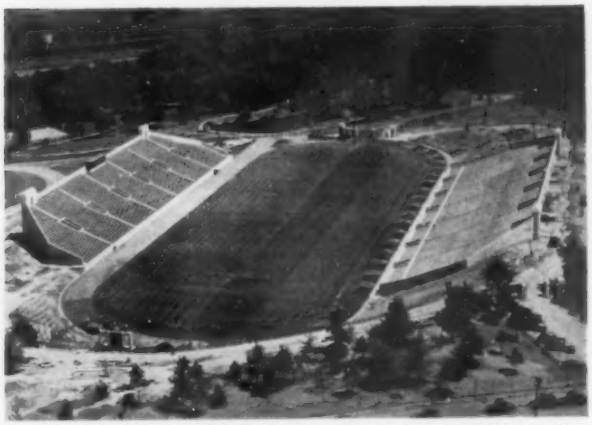
A Section of Ink Park in Canton, Ohio, Before Improvement

A Clay Pit in Canton, Excavated by a Brick Company

Improvement That Has Taken the Place of the View Above



The Completed Fawcett Stadium That Has Taken the Place of the Natural Amphitheater Above

the Canton Chamber of Commerce from a fund subscribed by the citizens and used as a sponsors' fund for the park and playground system. The site was donated to the Board of Education, which in turn raised a sponsors' fund through a bond issue, and with the aid of Federal funds completed the quarter-million-dollar stadium, seating 15,000 people.

The playing field, which is used only for football games, was thoroughly drained and topped with an excellent grass surface. It is surrounded with a quarter-mile cinder track. Concrete stands were built on both sides of the field. One end of the field was left open for entrance gates, and the other was landscaped and made suitable for adding seating capacity when needed. Land surrounding the stadium was purchased for driveways, approaches and parking lots.

The new Timken Vocational High School, opened this fall, represents a gift of over one-and-a-quarter million dollars by the Timken Foundation to the public school system of Canton. The importance of proper vocational training for high-school students in our industrial community was realized by H. H. Timken, of the Timken Roller Bearing Co., with the result that the gift was granted and the construction of the entire building supervised by the Foundation in cooperation with the Board of Education.

The building is four stories high and covers an entire city block in the downtown section, two blocks from the public square. The plans were based on a great amount of investigation of similar type buildings, and the school represents the most modern practical vocational high-school training facilities with accommodations for 1,300 students. The subjects taught include machine shop practice, sheet metal work, electrical work, automobile repair, foundry, mechanical drawing, printing, dietetics, cosmetology, business, salesmanship, cafeteria operation, dressmaking, etc.

Canton claims the lowest tax rate of any city of 100,000 population or over in the country. The rate for 1939 is 16.4 mills, which includes 5 mills for municipal purposes, 8.8 mills for schools, and 2.6 mills for the county. The county rate has an even application in all subdivisions. The Canton City School District rate is 12.4. The city's tax duplicate for 1939 totals $148,874,120. The entire Stark County valuation is placed at $324,066,700.

DALLAS L. HOSTETLER,
Manager, The Canton Chamber of Commerce.

Town Meetings in Talladega

TALLADEGA, ALA.—The picturesqueness of the old and the modern democratic ideal of the new are combined in the plan that the citizens of the 104-year old town of Talladega, Ala., have hit upon for settling their community problems, both personal and political.

This plan provides for periodic town meetings held at the county courthouse to which any and all of the 10,000 inhabitants of the city are invited to discuss civic problems, open-forum fashion. The meetings are conducted along democratic lines with no restrictions as to class or creed. Laborers, farmers, merchants, housewives, bankers, lawyers, all gather and exchange ideas. Town hall meetings, the first of which was held October 24, call for no dues or donations. A non-voter as well as a voter is allowed a voice in the conference.

Modernized plant at Fremont, Nebraska, installs Cochrane Flow Meters

TWO Cochrane Flow Meters, shown on the above panel board, feature the instrumentation of the $273,000 modernization job of the Dept. of Utilities of the City of Fremont, Nebraska. One meter (a flush-mounted, recording, indicating and integrating electric type) measures steam flow from the new 600-hp., 400-lb. pressure, 750° superheat boiler, and a duplicate instrument measures feed water flow to the boiler. The third meter is a flush-mounted, 4-pen temperature recorder used in conjunction with a Cochrane Hot Process Softener.

Cochrane's matchless accuracy and dependability are chiefly responsible for the growing list of Cochrane installations in municipal as well as in industrial plants. Full information on these meters is contained in Publication No. 2096.

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THE WILLIAM S. HEWETT SYSTEM

of reinforced construction

gives you a structure that WILL NOT CRACK.

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At left—500,000 gallon elevated water storage tank

The William S. Hewett System
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Raw Water Aeration
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Open and in action removing roots and caked sediment like this.

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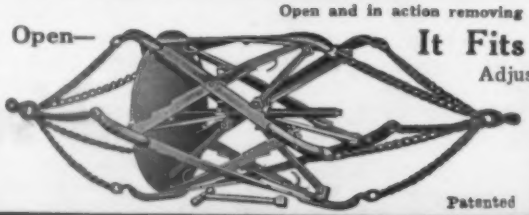

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Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

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Non-political, non-profit, non-partisan committees, made up of one member from each of the seven civic groups in Talladega, are being formed to study main community problems and to make recommendations to the town meetings. This organization also acts in an advisory capacity with the city and county administrations on matters concerning them. They expect, however, to devote a great deal of attention to cultural and civic enterprises over which the governing bodies have no direct control. The committees meet twice a month. Full town meetings are held less frequently and only as the need arises.

The town crier is a Talladega business man, Robert P. Tucker. Before each meeting he dresses in colonial costume and rides his horse up and down the streets crying, "Town hall meeting tonight!"

The chairman of the town forum is Clarence F. Belk, who has agreed to furnish an audience for any citizen having either a knock or a boost to air.

Though it is still in the experimental stage, residents of Talladega believe that through this plan they can make their city a model one by enlisting the cooperation of the citizens and arousing a stronger community spirit.

LOUISE FLAHERTY,
Montgomery Library Association,
Montgomery, Ala.

First Public Building for Illinois Town

BERWYN, ILL.—When Mayor Anton Janura was elected to office in April of 1935, our city was completing its 27th year from the date of incorporation. Strikingly enough, and this fact had rated Ripley's feature, it had not a single public building it could call its own. In all those years, it did not have a city hall worthy of the name. The city offices were housed in a dilapidated bank building, wholly inadequate for the purpose, and not large enough to house the various branches of the city government, which were scattered about the city in other rented quarters.

Consequently, the Mayor pledged to devote himself to the realization of what was then a dream—the erection of a modern municipal building in which, under one roof, the city's business could be efficiently performed. There were no funds available for that purpose in those days, but by dint of scrupulous care in running the city's finances, moneys were set aside in a special fund over a period of years, until almost $100,000 was saved. In the meantime, the Mayor made repeated efforts to obtain additional funds under WPA and PWA auspices, journeying to Washington in August of 1937, and holding many conferences with local Federal officials. Finally, in the summer of 1938 a PWA project was approved, providing for an outright grant by the United States Government of 45 per cent of the costs, and on the 30th day of November, 1938, the corner stone of Berwyn's new municipal building was laid. The

Center—Berwyn's City Hall, the City's First Public Building. Surrounding, from Left to Right—Scenes from the Dedication Celebration: Entertainers; Mayor Janura and County Treasurer John Toman; the Mayor Shaking Hands with D. C. Kennicott, Regional Director, PWA., City Comptroller Sid J. Hazlik Between; Mr. Kennicott speaking; Guest Artist Pana Gasser, Singing the National Anthem; Snapshots of the Crowd and One of the Floats

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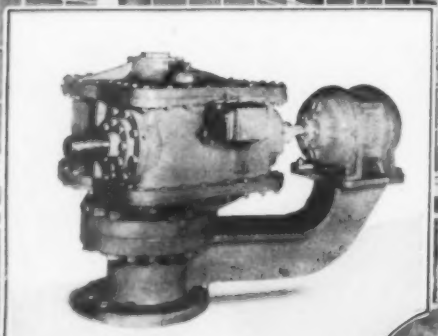
84" DOW PIVOT VALVES



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Specially designed worm gear type, with heavy roller bearings.

CONTROL VALVES for the NEW PITTSBURG DAM

N. H. Water Resources Board

Overall Height 30 feet. Net Weight 48373 pounds each. This will give an idea of the size and ruggedness of the two motor driven Dow Disc Arm Pivot Valves recently built by Chapman for installation as regulating valves at the Pittsburg Dam, northern New Hampshire — these valves delivering a maximum flow of 1000 c.f.s. under heads ranging up to 80 ft. The operating mechanism is a specially designed worm gear type, with heavy roller bearings. Valves and operating mechanisms are of cast steel construction throughout; Chapman-built for dependable service under the maximum service they are designed to meet.

Valve assembled in Chapman shop prior to shipment. Second valve partly assembled, at left.

THE CHAPMAN VALVE MANUFACTURING COMPANY

INDIAN ORCHARD, MASS.

building was formally dedicated on the evening of September 22d, in a ceremony preceded by a huge parade and followed by an open-house.

The building was constructed and completely furnished at an approximate cost of $200,000. It contains the offices of all city officials, the Police Department, Playground and Recreation Department; a jail, fire station, public library, court room and council chamber.

WILLIAM E. OPLATKA,
City Attorney.

Six Years of Municipal Progress in Bridgeport

EDITORIAL NOTE.—The re-election on November 7 of Jasper McLevy for his fourth- two-year term as Mayor of one of Connecticut's most important industrial cities, gives special timeliness to the following excerpts from Mayor McLevy's address before the recent New York Herald Tribune Forum:

A COSTLY PRACTICE FORMERLY existed in Bridgeport, which unfortunately prevails in too many cities. Contracts for repairs and maintenance of city property were, as a matter of course, awarded to political favorites. Such contracts were often superfluous and no work was necessary. Where some work was needed, an unnecessarily elaborate job was often contracted for at an excessive price. We have eliminated this practice by establishing a central maintenance bureau staffed by skilled mechanics. Their services are always available to every city department for the repair and maintenance of city property and routine construction work. The work done for each department is charged against its appropriation on the basis of actual time spent and actual cost of materials. Substantial savings naturally result.

Purchasing Centralized

It is amazing how few cities take advantage of the economies flowing from massed purchasing power based on competitive bids. Through sheer indifference or because of political policy, the rule is for each department to make small purchases from time to time from a favored source. This was the extravagant procedure we inherited in Bridgeport. Today purchases for all city departments on the pooled basis of annual needs are made through publicly advertised bids and from the lowest bidder. The savings have been enormous without sacrifice of quality. In this connection I should add that Bridgeport is one of the few cities in the country which insist on paying their own bills promptly in order to take advantage of cash discounts. This policy brings the city a tidy annual revenue.

By rigidly enforcing zoning and city planning we protect the home-owner's investment and insure the city's orderly development. Often zoning becomes a costly mockery because of widespread political or other exemptions. Repeated encroachments in restricted areas depress property values so sharply that the tax rate must be boosted to compensate the loss.

Municipal Insurance

Municipal insurance is always a large and expensive item and one particularly subject to abuse. It is usually distributed among political favorites of the party in power regardless of cost. We have created a fire insurance sinking-fund under which the city becomes a self-insurer to an increasing extent annually, our cash reserves being invested in our own bonds and others approved by the State Insurance Commissioner. Eventually we hope to become completely self-insured, thereby saving the cost of annual premiums. The percentage of fire loss still insured is handled through competitive bids at substantial savings as against the old rates. We no longer carry any compensation insurance. The city assumes its own risk, treating injured employees with the utmost generosity, and with a net saving of thousands of dollars annually.

No Trucks Are Hired

A favorite municipal racket, to which Bridgeport was no exception, is that of hiring trucks and other mechanical equipment from designated favorites at excessive rentals. The right people could buy a dilapidated old truck on installments and from the steep charges made to the city not only pay off the purchase price in a few weeks but indefinitely earn very comfortable profits besides. This has been stopped. We have for some years been buying our own trucks and equipment and paying our own installments instead of some one else's, with the result that today we own a huge fleet of mechanical equipment all bought and paid for out of current cash.

Countless public improvements have been completed, including miles of esplanades and traffic islands, making for beauty and safety, many miles of new highways and pavements, many miles of new sewers to relieve the grave pollution problem which vexes all coastal cities, and a new garbage incinerator used as a model elsewhere. New parks, playgrounds and a municipal airport have been acquired. A new modern sewage-treatment plant will soon be completed. A municipal printing plant has been established, which does all the city's printing, from a letterhead to a bound volume, with distinct annual savings. Every city department enjoys the most complete and modern equipment in its history.

The significant financial commentary on this elaborate program of municipal improvements, development and acquisitions is that it has all been fully paid for out of current cash on hand, despite an enormous public relief load. Not one cent in bonds has been issued to defray its cost during a period when the average city was going increasingly into debt. We pay as we go and keep our budget better than balanced. Not alone has the city been rehabilitated without going into new debt, but we actually paid off during this period approximately 12 per cent of our old outstanding debt out of current cash on hand. Yet this was accomplished without strain. Recurring annual surpluses still adorned the city treasury in place of former deficits. A 20 per cent pay cut previously forced on municipal employees has been eliminated. At the same time the city's tax rate has been progressively reduced year after year.

This is a record of what one city has done. It demonstrates that scientific, non-partisan administration of city affairs actually pays cash dividends. It is a record of intensely hard, serious work and conscientious adherence to a planned program. It is a record that can be duplicated wherever there is sufficient concern about good government to choose men and women who will furnish it.

JASPER McLEVY,
Mayor, Bridgeport, Conn.

The Annual Index
to Volume LIV of
THE AMERICAN CITY
(January-December, 1939)
appears on the last eight pages of this issue

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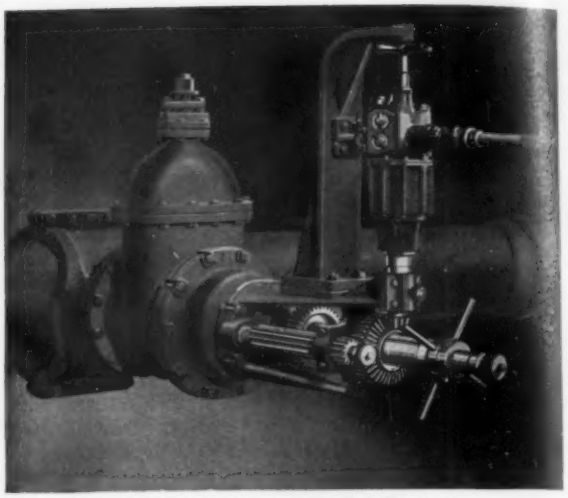

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Why not remember to mention THE AMERICAN CITY?

Improving Municipal Administration

Current Items from the Public Administration Clearing House

How "P.R." Fared at the November Election

VOTERS OF FOUR LOCALITIES—all in New York State—rejected proportional representation as a method of voting this year, information from the American Municipal Association shows. At the same time, six other cities conducted their first to twelfth elections under the system.

The four New York localities which voted down the proposal to give each group of voters representation in proportion to the number of its own votes were Schenectady, White Plains and New Rochelle; and Onondaga County (Syracuse), which considered P. R. in connection with a proposal for county-manager government.

Meanwhile Yonkers, N. Y., used P. R. to select its first council under the council-manager plan effective January 1, 1940. The city elected at large, and there were no party or other designations on the ballot. For each 10,000 votes cast a councilman was chosen.

New York City this year chose its second council by proportional representation. Here one councilman is selected for every 75,000 ballots cast, with an additional councilman for a remainder of 50,000. Other cities conducting council elections by P. R. include Wheeling, W. Va., which held elections in May; Toledo, Ohio, which on November 7 used it for the third time; Cincinnati, Ohio, which used it for the eighth time; Hamilton, Ohio, and Boulder, Colo.

Boulder, which has had proportional representation for 22 years, was the second city in this country to adopt this voting system. Ashtabula, Ohio, the first American city to adopt P. R., has abandoned it.

Michigan Counties Adopt Rural Zoning

WITH THE ADOPTION of county zoning ordinances by Marquette and Delta Counties in its Upper Peninsula, Michigan joins Wisconsin and California in regulating the use of rural land, the American Society of Planning Officials reports. The purpose of rural zoning is to provide for the best use of the land. By regulating the new settlement of those who wish to make a living from agriculture, for example, counties can prevent the location of farms on unproductive land which may be better fitted for other purposes. The counties thereby also eliminate the expense of supplying governmental services to widely scattered residents.

Twenty-four Wisconsin counties, including 5,000,000 acres of land, have been zoned. Rural zoning in California is mainly rural-urban, with both city and county joining in regulating land use for commercial, residential, agricultural and other purposes. Among other states with county zoning enabling acts, thus far put to only limited use, are Georgia, Indiana, Maryland, Pennsylvania, Virginia and Washington.

To Make Surety Bonds More Sure

CITIES SHOULD TAKE OUT new surety bonds for public officials every year rather than merely renew existing bonds, in order to get maximum protection over a period of years, according to a study on the bonding of public employees issued last month by the American Municipal Association.

Surety bonds, which are a form of insurance designed to protect an employer against dishonesty by his employees, may not give a city adequate protection against peculation that continues over a period of years if they are merely renewed, the report pointed out. For example, if a city treasurer's bond is $10,000, and he embezzles $30,000 over a period of four or five years, the surety company may be liable for only $10,000 if the same bond has been renewed year after year. If a new bond has been taken out every year, on the other hand, the city may be protected for the entire amount, since the $10,000 protection will apply to the amount embezzled in each distinct year.

The study, which was based on a survey of sample cities in four states, Michigan, North Carolina, South Dakota, and Wisconsin, recommended that a sound bonding policy should include six features:

1. Official bonds should be backed by corporate sureties rather than by personal bonds, such as local property-owners often sign for city employees.

2. Official bonds should be furnished by the municipality and paid for out of public funds.

3. The city should bond only officials and employees who handle either money or valuable property which may easily be converted into cash, and officials with statutory duties such as the collection of taxes.

4. The term of official bonds should be limited to one year. New bonds should be issued each year, eliminating renewals.

5. Groups of officials should be bonded by name rather than by the positions they hold.

6. The bond should be adequate, but need not amount to more than the financial responsibility of the position.

To Save Insurance Costs

Fire Insurance Rates Too High on Public Property

CITY GOVERNMENTS have been paying nearly four times as much in fire insurance premiums on municipal properties, in proportion to the amount collected for fire losses, as property owners in general, a sampling survey by the American Municipal Association shows. In the nine states included in the survey, cities over a ten-year period paid out nearly eight times as much for fire insurance as they collected in insurance losses, while property owners in general paid a little more than twice as much.

Municipal properties make good insurance risks, according to the sample findings. The fire insurance companies paid the city governments 13 cents for their fire losses out of every dollar collected from them in premiums on municipal properties, while they paid property owners in general 47 cents for fire losses out of every dollar of premiums on all classes of property.

The states included in the study were Illinois, Michigan, Minnesota, New Mexico, New York, North Carolina, South Dakota, Texas, and Wisconsin. During the period examined, the cities surveyed in these states spent $2,449,455.18 in premiums for the protection of public property. Their fires cost insurance companies $362,020.25. On municipal properties in the various states, property loss ratios—the proportion of loss settlements to premiums—ranged from 2.91 per cent in New Mexico to 22.65 per cent in Minnesota. On all properties, the loss ratios in the

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Give You 3 Protections Against Frost

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against frozen operating threads. The roof-like shield operating nut keeps out rain, snow, sleet or spray. The stuffing box prevents water from the main from climbing up around the threads. So long as water doesn't touch the operating threads they cannot freeze.

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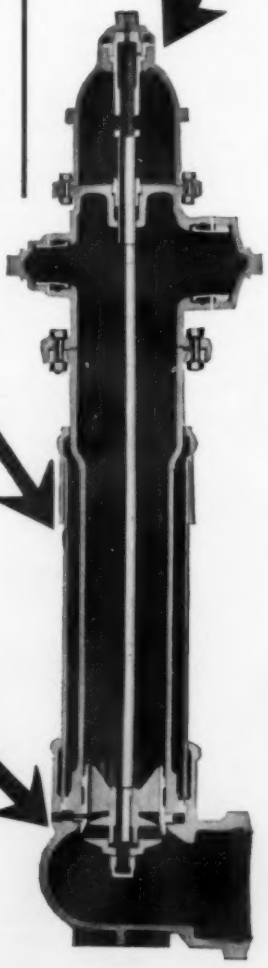
against the thrust of frozen ground. Moist, tight-packed ground seizes most hydrants and, on freezing, heaves them upwards to start joints or crack castings. Mathews is protected by this loose protection case which is free to rise with the heaving ground, thus preventing damage to the hydrant proper.



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against standing water. A positive and automatic drain valve must open as the main valve closes, since it is all one piece. A properly set Mathews drains instantly.

The worst fires are winter fires. The worst hydrant troubles are winter troubles. Specify Mathews and be prepared. A properly set Mathews need never be dug up. All overhauls, accident repairs and service of parts take place above ground. Write for details.

MATHEWS HYDRANTS

***Made by* R. D. WOOD COMPANY**

Manufacturers of Sand Spun Pipe (centrifugally cast in sand molds) and R. D. Wood heavy-duty gate valves for water works

400 CHESTNUT STREET, PHILADELPHIA, PA.

ities studied ranged from 34.73% in Texas to 54.1% in Michigan.

Since insurance companies generally accept a property loss ratio of up to 50 per cent, and since they are paying out proportionately much less for losses on municipal properties than on other properties, the report suggested that the cities deserve a preferred rating and some reduction in the rate of their premiums. It further suggests that insurance companies and rating bureaus should maintain a statistical classification of cost experience data for various classes of risks, in order to establish the rates on such classes. No such classification is now maintained.

North Carolina cities secured a 25 per cent rate reduction on fire insurance for city property a year ago, the report pointed out, after a study showing the low loss ratio had been presented to the insurance rating bureau. The rate reduction, it is estimated, saves the cities approximately $10,000 each year. All insurance companies doing business in New Mexico also made a slight reduction on certain classes of public property, effective in March, 1936.

—See also page 89 of this issue for Bridgeport's experience with fire insurance.

Cities Need Burglary Insurance Only Under Unusual Circumstances

EXCEPT UNDER UNUSUAL CIRCUMSTANCES, it "seems difficult to justify" the necessity for carrying robbery and burglary insurance on municipal money and securities, says a report just released by the American Municipal Association. The report was based on a study of insurance programs of 447 sample cities in five states—Michigan, New York, North Carolina, South Dakota, and Wisconsin. It showed that 94 of the cities carried robbery and burglary insurance. During a 10-year period, the 94 cities paid more than $70,000 in premiums to insurance companies, according to the survey. Over this same 10-year period, nothing was paid in losses to the insured cities.

The fact that the cities experienced no losses probably was due to the safeguarding of money and securities in city buildings and in transit to banks by municipal police forces, according to the study. It pointed out that many cities follow the practice of detailing police officers to accompany a messenger to the banks, and guard the cashier's window during peak collection periods.

"With the usual protection facilities available to the municipal officials responsible for the care of the city's money, and with the type of experience record shown above, it seems difficult to justify the necessity for carrying robbery and burglary insurance on money and securities except in very unusual circumstances," the report concluded.

On a state-by-state basis, robbery and burglary insurance was carried by 19 of the 25 Michigan cities studied, 23 of the 46 New York cities, 28 of the 54 North Carolina municipalities, 15 of the 22 Wisconsin cities, and 9 of 300 South Dakota municipalities included in the study. The types of insurance carried by the municipalities ranged from office hold-up and robbery to safe and messenger robbery insurance. For example, of the 23 New York cities surveyed, 20 carried both office hold-up and robbery, and safe burglary policies, while only six cities insured against messenger hold-up and robbery.

It was pointed out that a number of variable factors determine the premium rate. The chief factors considered are the rates for the various areas, and the amount of the insurance policy. Protective devices or systems, police guards, night watchmen and the number of regular municipal officials on duty during the day or night are considered. The type of vaults and inside chests are also considered in deciding rates.

Cutting Premium Costs on City Motor Equipment Insurance

CITIES CAN MAKE material savings in premium costs for public liability and theft insurance on their motor equipment by insuring all units under one "fleet" policy, an analysis of a survey by the American Municipal Association shows. The survey covered sample cities in Michigan, North Carolina, South Dakota and Wisconsin. Under the fleet, or group insurance, plan, six or more vehicles of any type owned and operated by a city may be insured under one policy. Premium cost reductions increase in proportion to the number of machines insured. The usual average premium reductions, according to the study, run as follows: For 6 cars—the minimum—the average reduction per car is 1.7 per cent; for 7 cars, 2.9 per cent; 10 cars, 5 per cent; 15 cars, 6.7 per cent; 20 cars, 7.5 per cent; 30 cars, 10 per cent; 50 cars, 12 per cent; 150 cars, 19 per cent.

Forty-four cities surveyed in Michigan, North Carolina and Wisconsin insure all their vehicles under a fleet policy, according to the survey, and the larger cities in South Dakota are adopting the plan. Three of the cities surveyed use fleet insurance on all automobiles and trucks except those operated by the water and light department. Another city insures only motor equipment used by the water and light departments under a fleet policy, using separate policies on all other vehicles. This results in higher premium rates both for the fleet policy and the policies on segregated items of equipment, according to the analysis. Fifty of the cities surveyed insure each vehicle separately, and 27 of them carry insurance on more than 5 pieces and might reduce total premium costs by using the fleet plan, the study said.

A study of liability cost records of sample cities in Michigan, North Carolina and Wisconsin over a ten-year period shows that loss payments average between 7 and 8 per cent of money paid out in premiums. For example, the Michigan cities surveyed paid more than $100,000 in premiums, and suffered about $6,600 in losses over the ten-year period.

Cities carrying theft insurance often insure all motor equipment used, including police cars, fire trucks, ambulances, street sweepers and sprinklers, and snow-plows. Several of the cities probably carry theft insurance because the cost is almost negligible by comparison with other forms of insurance, according to the study. However, the use of the fleet policy for theft insurance also can effect material savings. It was pointed out that over a ten-year period no losses were experienced by any of the cities surveyed on motor equipment insured against theft.

Pamphlets on Water Rates and Service Charges

The reprints of the Water Rates and Service Charges for 110 cities published in 1939 in THE AMERICAN CITY are to be made available shortly after January, 1940, at one dollar each. (See page 81.)

THE AMERICAN CITY, 470 Fourth Avenue, New York:

Reserve ..... copies of the 1940 reprint of "Water Rates and Service Charges" for me at $1 each. Send ..... copies of the January, 1935, reprint, and ..... copies of the January, 1936, reprint when the 1940 pamphlet is mailed. This gives me the advantage of the special rate of 50 cents each for the 1935 and 1936 pamphlets.

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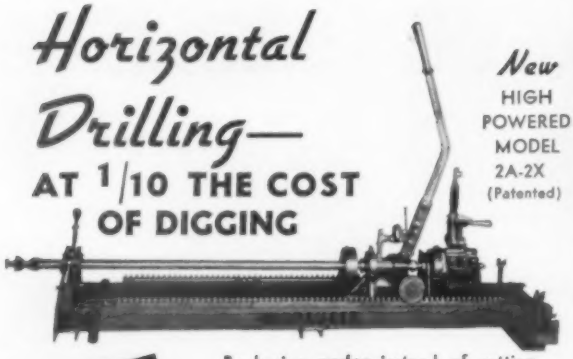

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HE NOW KNOWS HOW LEVEL IS CHANGING *MILES AWAY*

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For full information on this Bristol's simple, low-cost Metameter System of remote measurement of level, write for Bulletin 51-58.

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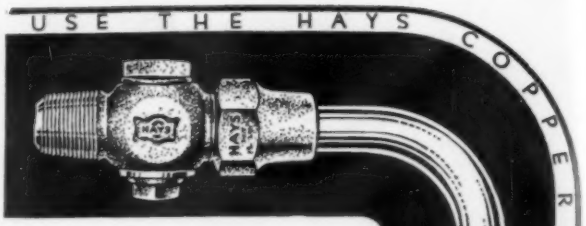

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If you are now using short-life service piping from Main to Curb—decide to start a replacement program. Use the Hays Copper Service Method on all new and renewal installations. It's sound economy that will show immediate savings and a handsome dividend in long-life service. Why dig a ditch every 7 years or less—use long-life copper the Hays Way. Write for details.

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A catalog that explains in detail the various types of watering equipment designed to keep your parks and parkways always fresh and green. Skinner System engineering and consulting service has solved every conceivable type of watering problem. We are equipped to handle your watering problems better at lower cost. A card or letter brings you the catalog and details of our service. No obligation.

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell, John B. Moriarty, William A. Van Duzer, Ralph F. Michel

Don't Shoo Santa Claus

By William R. McConochie

Traffic Engineer, Chicago Surface Lines, Chicago, Ill.

SANTA CLAUS rides on rubber to the doors of many of our retail merchants. In Chicago, from 10 to 50 per cent of shoppers use automobiles. The lower figure applies to most stores in the central business district and to small outlying stores of purely neighborhood character. The higher figure is reached by the most important outlying department stores drawing customers from extensive surrounding territories. Even 10 per cent of gross business looks like Santa Claus when it means the difference between red and black in a shopkeeper's net profit.

Merchants don't want to shoo Santa Claus with parking restrictions and traffic regulations, but sometimes they wish the whiskered gent would keep his reindeer out of the way of the great bulk of their customers who come on foot or in transit vehicles. In few cases, however, has it occurred to them that *many streets which look hopelessly congested have ample capacity for all useful traffic—and all useful parking as well.*

Useful traffic, omitting commercial vehicles from our discussion, consists of autos carrying customers and potential customers. It also includes people on foot. It has been well stated that the wise business man locates his store where the greatest number of people would pass every day whether his store were there or not. The established business man can increase the number of people passing his door by keeping traffic arteries clear for all whose logical routes on their daily trips carry them past his stores.

Shoo Angle Parking

One of the greatest impediments to free-flowing traffic is angle parking. Business men in Chicago, nevertheless, have clung to this type of parking in districts where it had taken root before the Uniform Traffic Code made it illegal everywhere in the city. Merchants reasoned that return to parallel parking would permit more traffic and faster traffic. More and faster traffic, they argued, would mean more accidents.

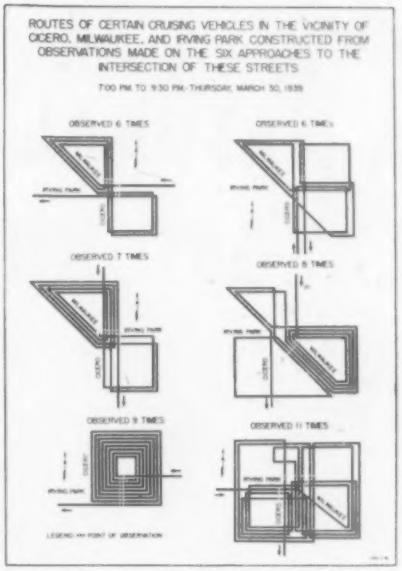
Safety! What sins are committed in thy name!

The argument has been knocked into a cocked hat during the past twelve months. In one minor shopping center extending two blocks along a fairly heavy traffic artery, angle parking was largely responsible for 58 accidents in one year. The merchants agreed to test a plan that would eliminate 40 per cent of their beloved angle parking. Speeds increased, traffic increased —and accidents fell 63 per cent.

A major outlying shopping center had had angle parking along both sides of a 70-foot street for a distance of three blocks for many years. In May of this year, the Police Department eliminated angle parking and materially reduced the amount of double parking—without the blessing of many of the local business men. Accidents in that section dropped 20.2 per cent.

Within the past few weeks a drive has started to eliminate all angle parking in Chicago. The job is being directed by Police Commissioner James P. Allman and Alderman George D. Kells, Chairman of the City Council Committee on Traffic and Public Safety. The first section tackled was along 3,000 feet of well-known Roosevelt Road (formerly 12th Street). Fig. at top of p. 97 shows habits contributing to hazard and congestion on Roosevelt Road, which is 78 feet wide between curbs. Few streets in any section of similar length could equal its record of 177 accidents per year.

Police cleared out the illegal parking with vim, vigor and tickets—surprisingly few tickets. Immediate results have been obtained. The most easily measured benefit has been the improvement in street-car speeds. These have increased by an average of 8.5 per cent, even before schedule changes to take advantage of the freer moement. Speeds of free-wheel vehicles have probably improved even more, since there is now at least one clear lane outside the car track at all times.


ROUTES OF CERTAIN CRUISING VEHICLES IN THE VICINITY OF CICERO, MILWAUKEE, AND IRVING PARK CONSTRUCTED FROM OBSERVATIONS MADE ON THE SIX APPROACHES TO THE INTERSECTION OF THESE STREETS
7:00 P.M. TO 9:30 P.M. THURSDAY, MARCH 30, 1939
OBSERVED 6 TIMES
OBSERVED 6 TIMES
OBSERVED 7 TIMES
OBSERVED 8 TIMES
OBSERVED 9 TIMES
OBSERVED 11 TIMES

Street Patterns Made by Cars Cruising in the Business District

The special Parking Squad has already moved along to another district, leaving to precinct police the maintenance of orderly parking. A vehicle angle-parked or double-parked is now so conspicuous that enforcement is relatively easy.

It can be predicted with confidence that traffic volumes on Roosevelt Road will now increase. It will be interesting to follow the trend in dollar volume of retail sales. If the economists are right in advising merchants to locate "where your show windows will be seen by the greatest number of people," sales will mount with volume of "useful" traffic.

More Curb Space for Cruising Vehicles

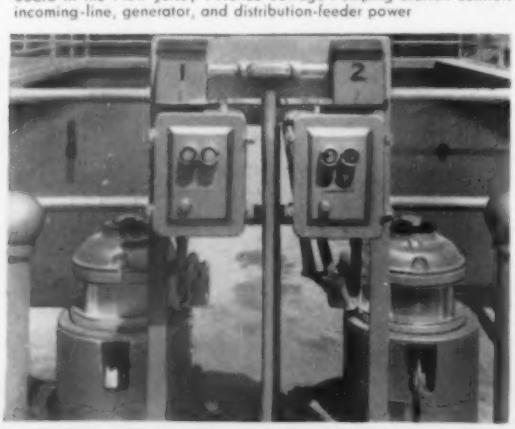
What kind of traffic is *not* useful? One kind that has received little attention up to this time is composed of cruising vehicles. Cruising drivers, disregarding taxicabs, fall into one group or another. There are those who insist on parking within 20 feet of their destinations, or not at all. They will drive 'round and 'round a block until

Clean Waters

A NATURAL PLAYGROUND

Louisville, Ky., uses these variable-speed G-E motors to drive sewage pumps in its Point Sewage Pumping Station, constructed by the Commissioners of Sewerage. The cubicle control in the background is also General Electric

Washington, D. C. This huge metal-clad and dead-front G-E switchboard in the New Jersey Avenue Sewage Pumping Station controls incoming-line, generator, and distribution-feeder power



Denver, Colo. These two G-E vertical, totally enclosed gear-motors are installed outdoors at the sewage-disposal plant. Two G-E magnetic switches in weatherproof cases are also shown

Don't Let POLLUTION Rob Your City of Important Recreational Facilities

MOST cities have, in their own backyard, streams, rivers, or lakes which are *natural* playgrounds when kept free from pollution. Doesn't it seem foolish to neglect these recreational facilities, which are often in areas where they are badly needed?

The cost of adequate sewage treatment is surprisingly small—only a fraction of a cent per person per day. The prevention of pollution not only provides recreational facilities in the form of swimming, boating, and fishing, but it also boosts property values along the waters, and protects public health.

Let Our Engineers Help

General Electric offers a complete line of electric equipment for modern sewage-treatment plants. The *correct* application of such equipment may affect the plans for even the foundation of your plant. Call in our engineers when plans are in the initial stage—they'll gladly work with you and your consultant. General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

011-554

a curb space is vacated near the store they wish to patronize. They will not park in the next block and walk back. Then there are the Elmer Q. Milquetoasts whose wives "will be out again by the time you go around the block once." Usually Elmer is still going around when the store closes.

A check was made on a Thursday evening in one of Chicago's busiest outlying shopping districts. At one time, traffic was backed up for several hundred feet in all six directions from the key intersection. Yet 7 per cent of all the vehicles entering the intersection were cruising. One driver, lacking imagination, circled the same block eleven times. (See Fig., p. 95.) Another wove a more interesting pattern in driving 5.8 miles to enter the intersection eleven times. *Space was available during the entire period in a paved, lighted, and guarded free parking lot less than 600 feet away.*

Seven cruisers in 100 automobiles create as much accident hazard and congestion as several times as many normal vehicles. Cruisers cut across eight pedestrian cross-walks every time they circle a block. Their attention is not directed toward the roadway ahead of them, but toward curb or doorways where they expect to find the shopping members of the family. They move as slowly as possible, moreover, because their principal object is to kill time. Cruising can offset the benefits of a street-widening project designed to add 25 per cent to capacity for moving traffic.

Cruising in private autos cannot be regulated because cruisers cannot be identified readily.* *Free parking lots will reduce the amount of cruising, but they will not eliminate it. Numerous small, well-distributed free lots with capacity at every location exceeding maximum demand would be required. Obviously, this ideal can be attained only in isolated cases. The most practical deterrent to cruising would seem to be more active turn-over in use of curb space.*

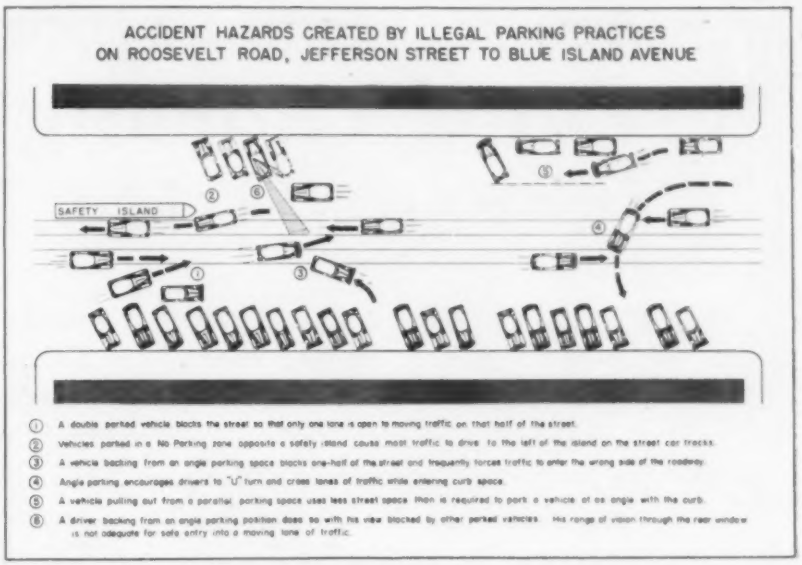
All-Day Parker Must Find Off-Street Space

The average shopper, we have found, parks approximately 38 minutes in outlying business districts. In four of these neighborhoods, however, from 40 per cent to 58 per cent of all curb space used by private vehicles was occupied by automobiles belonging to merchants, employees, and visiting salesmen. In a typical area, the space used by the average person in this group could have accommodated eight average shoppers. (See Fig. at right.) Elimination of long-time parking in this district would increase potential turn-over in use of curb space 2½ times.

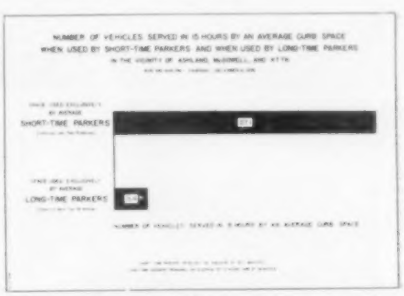
It would seem that business men's organizations would take steps to gain such advantages by eliminating long-time parking. As previously mentioned, however, merchants in Chicago's outlying business districts are fearful of the effects on trade of any parking regulations. Their attitude can be understood when it is realized that all such shopping centers must meet intense competition from one or more equally attractive districts within two miles, as well as from the primary shopping center downtown.

In one district, business men attempt to reserve all curb space for customers during the Christmas rush through mutual agreement. Otherwise, they regard parking problems lightly, if at all, unless someone threatens the status quo of angle parking or other special privileges.

As business conditions improve, however, merchants become more willing to try new parking schemes at the risk of driving away a few motorist-customers. Usually they are surprised to find that good engineering and enforcement hits only the useless traffic and the useless parking, to the advantage of all other street users. A few timid experiments in Chicago have started what may become sweeping revisions in parking control. They may shoo Santa Claus, but it is more likely that orderly street use will shoo the old fellow toward the stores and shops, rather than away from them.


ACCIDENT HAZARDS CREATED BY ILLEGAL PARKING PRACTICES
ON ROOSEVELT ROAD, JEFFERSON STREET TO BLUE ISLAND AVENUE
SAFETY ISLAND
① A double parked vehicle blocks the street so that only one lane is open to moving traffic on that half of the street.
② Vehicles parked in a No Parking zone opposite a safety island cause most traffic to drive to the left of the island on the street car tracks.
③ A vehicle backing from an angle parking space blocks one-half of the street and frequently forces traffic to enter the wrong side of the roadway.
④ Angle parking encourages drivers to "U" turn and cross lanes of traffic while entering curb space.
⑤ A vehicle pulling out from a parallel parking space uses less street space than is required to park a vehicle at an angle with the curb.
⑥ A driver backing from an angle parking position does so with his view blocked by other parked vehicles. His range of vision through the rear window is not adequate for safe entry into a moving lane of traffic.

Getting Accidents Ready to Happen, by (1) Double Parking, (2) Parking Where None Is Permitted, (3) Backing Out into Half the Street (see 5), and (4) U-turning



In a 15-hour period, 27 vehicles used the same space that only 3.4 long-time parkers used

Elected

Hawley S. Simpson, New I.T.E. President

THE INSTITUTE OF TRAFFIC ENGINEERS at the tenth annual convention elected officers as follows:

President, Hawley S. Simpson, Research Engineer, American Transit Association, New York.

Vice-President, D. Grant Mickle, Director Traffic and Safety Division, Michigan State Highway Department, Lansing.

Secretary-Treasurer, Harold F. Hammond, Director Traffic Division, National Conservation Bureau, 60 John Street, New York.

* Officials in other cities may be interested in determining the amount of cruising at their most congested intersections. The method used in Chicago was to call the license numbers of all vehicles entering an intersection into six-volt Dictaphones in automobiles parked at the curb on all approaches. The cylinders were later transcribed onto slips of paper, which were then sorted to bring together the license numbers of those who entered the intersection three times or more.

The "Thoroughbred" increases its LEAD!

THE KARPARK CORPORATION is proud to announce the new K-4 Automatic Parking Meter. The K-4 includes ***all*** of the many improvements in our P-N (penny-nickel) model adapted for use in a straight nickel parking meter , , , Municipal Engineers will recognize the mechanical superiority of this new KARPARK Thoroughbred. We welcome requests for full and detailed information , , , All KARPARK Meters are licensed under the patents of VEHICULAR PARKING LTD.

THE KARPARK CORPORATION

420 LEXINGTON AVENUE NEW YORK, N. Y.

FLINT says, "Bring us more THOROUGHBREDS!"

IN MARCH 1939, Flint, Mich., installed 500 Karpark Automatic Parking Meters—In November, Flint purchased 200 additional Karpark Meters.

The outstanding "thoroughbred" performance of these Karpark Automatics (manufactured under the original U. S. Bureau of Standards' specifications) on the streets of Flint for eight months was conclusive evidence to Flint's city officials of the extreme dependability, accuracy and capacity to "take it on the chin" embodied in all Karpark Meters.

The KARPARK Corporation invites every city official who wishes to avoid "headaches" in solving parking meter problems to write for details.

All KARPARK Meters are licensed under the patents of VEHICULAR PARKING Ltd.

THE KARPARK CORPORATION

420 LEXINGTON AVENUE • NEW YORK, N. Y.

Striping Streets—Straight Travel

By Robert M. Reindollar
Assistant Chief Engineer, State Roads Commission, Baltimore, Md.

DEFINING traffic lanes by marking stripes on the surface of the pavement has been one of the greatest contributions to motoring safety since the advent of the automobile.

In 1936 the B. F. Goodrich Co. conducted a survey on the origin of the method, and Edward M. Hines, for more than thirty years Road Commissioner of Wayne County, Mich., was given credit for having painted the first white stripe in 1912.

The first center-line stripe applied on the surface of the road by the Maryland State Roads Commission was painted on the pavement over the top of a hill in the fall of 1920, in connection with a safety campaign conducted by the Commissioner of Motor Vehicles. The public reaction was so favorable that the following year the Commission adopted a policy of painting a white center-line stripe throughout the entire state system of highways at all vertical and horizontal curves having limited sight distances, and also at highway intersections.

In 1928 we were confronted by the problem of marking a four-lane highway, and, desiring to differentiate from the white center-line strip which indicated the line over which no vehicles should cross, we selected yellow paint to divide two lanes of traffic operating in the same direction. As far as we know, this was the first time yellow paint was used for surface marking. Over a period of time, it was observed that yellow paint had exceptional visibility in fog, and in 1933 both continuous and broken lines were painted with yellow paint in the mountainous sections. This service created a public demand for its extension throughout the state, and as hand-labor methods were making the cost of application prohibitive, we developed in 1936 our first truck for the mechanical painting of surface stripes.

This unit was equipped to paint a continuous 6-inch line, and was so arranged that the color of the line being laid could be changed at the will of the operator, yellow paint being used on bituminous surfaces, black on concrete surfaces, and white on both types to indicate no-passing zones. After operating this unit for a short time, we were again confronted with the public reaction in favor of a yellow stripe even on the white concrete surface as a better indication for driving under certain weather conditions. This caused us to adopt yellow and white as the colors to be used exclusively for surface marking, and to adopt a new method to indicate no-passing zones.

At about the time we started using yellow paint, other surface markings such as railroad crossing indications, school zones and crosswalks were inaugurated.

In 1936 we striped our first three-lane highway and, after some experimentation, adopted the method of marking which is in use today. By this method, two lanes of traffic, where sight distances are limited, are made available on ascending grades, with a controlled crossover at the brow of a hill. Upon first observation everyone invariably condemns this as a very dangerous method. Records show, however, after three years of service, that although occasionally a reckless driver will ignore the marking, there has never been an accident as a direct result of this method, and it definitely does give greater use and freer movement of traffic over the roads.

In 1937, we developed a new unit for striping, and in order to provide for freer movement of traffic, devised a line-laying device which would paint two colors simultaneously. This made it possible to paint a white line adjacent to a continuous yellow center-line stripe, and by this method create no passing zones, restricting traffic by direction of travel, thereby releasing the vehicle for free movements as soon as the operator has clear vision ahead. The new unit has an especially designed tank of three compartments, one of 450-gallon capacity for yellow paint, one of 275-gallon capacity for white paint, and a smaller compartment of 75 gallons for thinner. The paint is applied by air pressure developed through a small compressor mounted on the motor. It is capable of laying from 20 to 23 miles of line under favorable operating conditions in 2½ to 3 hours.

We have received much favorable comment on our method of striping, and we believe it should be universally adopted.

Seeing Is Avoiding Many Accidents

The Several Articles on traffic safety lighting contained in the August issue of The American City are appropriate subject matter to encourage municipalities to safeguard the night driver and pedestrian.

Since the traffic safety problem will undoubtedly perpetually confront public officials, it appears that the gist of such articles will necessarily have to be constantly reiterated. The traffic engineer is gradually becoming recognized as one of the most important factors in recommending and putting into practical use those facilities which wil make streets and highways deathproof so far as it is practical to do so.

May I congratulate you and your associates in furthering this most timely project of miminizing motor-vehicle fatalities and accidents occurring during the hours of darkness.

John G. Learned,
Chairman, Traffic Safety Lighting Committee, Illinois Public Utilities Association, Chicago, Ill.

Curb Parking Solved by Roanoke's 365 Meters

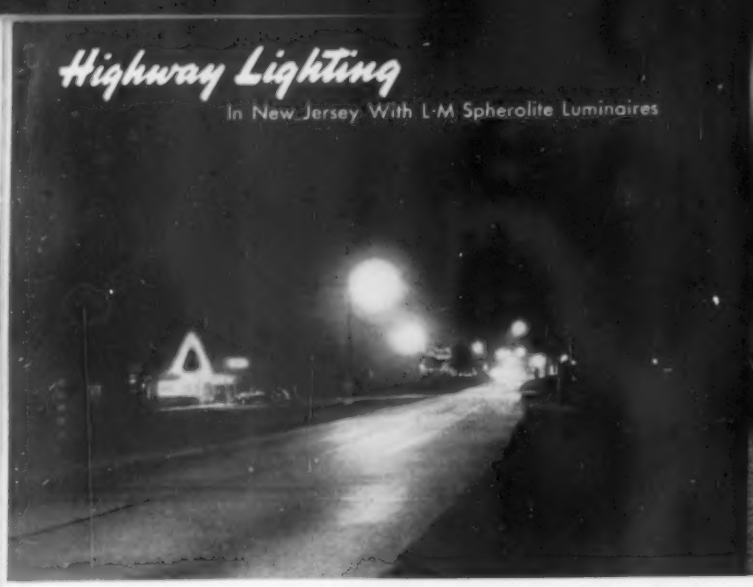
On July 22, 1938, the city of Roanoke installed 100 Karpark and 100 Mark-Time parking meters for a six-months trial period. At the end of this period the city ordered and installed 165 additional meters. This makes our total number of meters on the streets to date 365, of which 265 are Karparks.

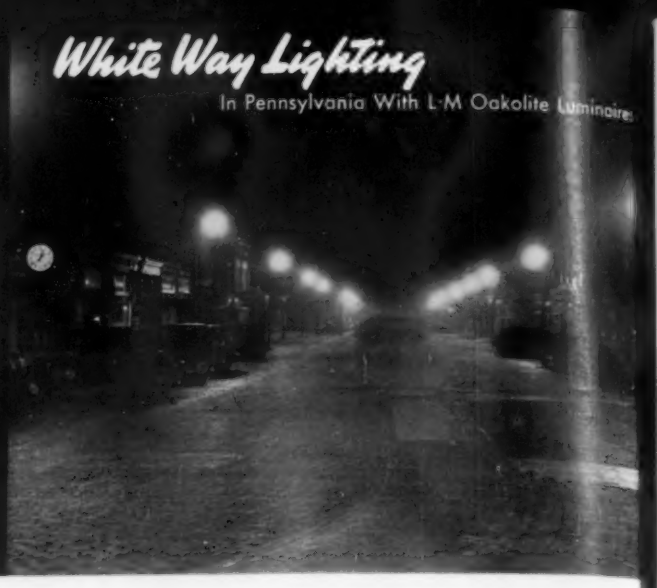
Before parking meters were installed in Roanoke, we suffered from serious traffic congestion. Owing to all the problems associated with narrow streets, it was very difficult to enforce the parking-limit and similar ordinances. Quite often automobiles would park so closely that it was almost impossible to move in or out of parking spaces. Since the meters have been installed, these problems have become almost negligible.

The merchants in the business section, who at first were opposed to parking meters, seem to have been won over almost entirely to this device. In some cases where merchants have no rear entrance to their stores, we have been forced to allow them a loading zone; however, comparatively few of these cases have arisen, and traffic on our streets is much better regulated with the aid of parking meters than ever before. Enforcement of the parking limit, which is one hour, is now taken care of by one motorcycle officer.

Trucks actually engaged in loading and unloading are exempt from the parking meter ordinance. We have one man, who was already employed by the city, devoting nine hours per weeks to servicing all meters. Mechanical difficulties are comparatively few.

H. L. Woodson, Jr.,
Clerk, City Manager's Office, Roanoke, Va.





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Sodium Lights Cleveland's Main Avenue Bridge

By R. L. Biesele, Jr.
Application Engineer, Lighting Division,
Westinghouse Electric and Mfg. Co., Cleveland, Ohio

THE lighting system was as much an integral part of the design of the new Main Avenue bridge in Cleveland as were the foundations or roadway of this $7,200,000 structure. This bridge, across the mouth of the Cuyahoga River, is one of the most important highway links to be placed in service in 1939, since it forms the key link in the Cleveland lake-front highway development. It serves not only as a by-pass for east-west traffic around the business district, but also as an express highway for the traffic between the West Side and the business district.

John O. McWilliams, Cuyahoga County Engineer, W. E. Blaser, County Bridge Engineer, S. G. Wilcox, Electrical Engineer who designed the lighting system, and other county officials connected with the design and construction of the bridge, early decided that the bridge must be provided with the finest modern traffic safety lighting; for it carries a large volume of traffic after dark at all times, and during the winter the evening rush hours occur after darkness has fallen. Adequate visibility after dark is vital to the safety of this traffic.

The second requirement for the lighting of the bridge, after safety, was that it should be distinctive in quality, in order to make the bridge, outstanding in so many respects, outstanding also in this. It was therefore decided to use sodium vapor lighting.

Sodium Vapor Lighting

The outstanding characteristic of sodium vapor light is its distinctive yellow color. Monochromatic in quality, it changes all colors viewed under it to yellow, black, or some shade of yellow in between. This monochromatic quality permits the eye to focus more sharply than with white light, which is a mixture of all colors, and thus to see smaller details.

This distinctive color quality, with its attendant color distortion, limits the application of sodium lighting to locations where pedestrians are relatively rare after dark. The usual reaction of the layman to his appearance under sodium lighting is that he looks like a corpse, although it is better to look like one than to be one. But for a bridge such as this, which carries vehicular traffic almost exclusively, the color distortion is not detrimental, and is more than counterbalanced by the distinctiveness of the sodium light.

Sodium-Vapor Lighting Unit

Visibility

The lighting system was primarily designed to produce silhouette vision, so that the driver would see far enough ahead to avoid any person or object on the roadway. But consideration was also given to rush hours, when cars are so close together that seeing by surface details is necessary. The system was therefore designed to produce a combination of the two types of vision.

In order to provide the proper visibility on the six-lane divided roadway, three lanes in each direction, 10,000-lumen lamps installed in open type sodium highway luminaires were located 100 feet apart, opposite, at a 25-foot mounting height. The average illumination provided on the roadway is one foot-candle, or approximately 40 times the illumination from a full moon straight overhead. It is visibility com-

Attractive Safety Lighting on Main Avenue Bridge, Cleveland, Ohio

Union Metal
TOP AND BOTTOM!
Union Metal makes a double contribution to Cleveland's new $7,500,000 Main Avenue Bridge! Down under, supporting eight of this mammoth structure's main piers, are approximately 1100 Tapered Monotube Piles. On top, lining both sides of the six lane highway, are scores of Union Metal steel standards on which are mounted the newest of sodium lighting units.
Economy as well as safety prompted the selection of these two Union Metal products. Use of Tapered Monotubes for steel encased concrete piles makes for lower installation costs in addition to providing a substructure possessing greater load-supporting values. Union Metal lighting standards combine correct mounting heights for scientific illumination with modern design and long-life steel construction.
If your problem is one of supplying better light or supporting bigger loads, specify "Union Metal."
UNION METAL
THE UNION METAL MANUFACTURING CO.
CANTON, OHIO

parable with daylight seeing conditions.

Lighting Units

The Westinghouse sodium highway luminaire chosen for this bridge is an open type consisting of a cast housing in which are mounted the auxiliaries for operation of the lamp, and to which is attached a set of semi-parabolic reflectors designed to throw the light from the lamp in two main beams along the roadway. The beam pattern is designed to produce a uniform brightness on the surface of the roadway, and to confine the light to the surface of the bridge, permitting a minimum loss of light into the sky and off the sides of the bridge.

The lighting units are the only structures projecting above the railing of the bridge. Because of this prominent position, they had to look good. The streamlined appearance of the luminaire was coupled with a special Union Metal steel standard designed to match the architecture of the bridge. The complete unit is shown in one of the accompanying illustrations.

The standard has a 7½-foot bracket to locate the luminaire out over the roadway so that specular reflections off the pavement are toward the motorist, assisting in the silhouette vision, particularly on a wet night. Some of the standards are duplex, and some have two brackets at different levels on opposite sides of the standard, to locate the luminaires properly above the various ramps and underpasses which have been constructed to assist the smooth flow of traffic onto and off the bridge at either end.

A total of 139 sodium luminaires are on the bridge, together with 35 incandescent units in the various underpasses where lower mounting heights were necessary and a different type of unit suited the lighting requirements more closely. The lighting system was installed by the Martien Electric Co., of Cleveland.

Circuits and Control

Power is supplied to the units by four 6.6-ampere series circuits, each unit being operated from an isolating current transformer to minimize the voltage in the wiring going up the standards. The circuits are fed from regulators located in transformer vaults, one vault at each end of the bridge, and the regulators are controlled by oil switches. A feature of the control system is that the oil switches are operated by photoelectric relays. These relays automatically compensate for bright and dull days, turning the lights on when the daylight has dropped to a given level for which the cells have been set. Thus the lights are always operating when needed for traffic safety.

The Lights of Christmastime

FOR 11½ months in the year municipal governments and their citizens serve each other right—and then, every year, for half a month a new spirit descends and envelops them all, which if it could persist through the 11½ months would transform the world.

Portsmouth, Va., is spreading that spirit by turning on its Christmas lights on November 29 this year instead of December 7, reports Secretary J. M. Overton of the Chamber of Commerce. Some 25,000 people came to town to witness the ceremony, opened by Mayor John P. Leigh, Sr.

Connellsville, Pa., pulse of the coke region, bedecks itself, in the words of Chairman J. V. Soisson of the Chamber of Commerce Steering Committee, with "a star outlined in yellow globes, suspended in the center of the street, and a streamer of red and green lamps from the star to each side of the street."

Indianapolis concentrates its Christmas lighting display in the Circle around the Soldiers and Sailors Monument, because, points out Vice-President Wallace O. Lee of Indianapolis Power & Light Co., "it is the center of the business district as well as of the city, and a real display on Monument Circle may bring people not only from the outskirts of our city but also from all over our state." The festivities are in charge of the Electric League and the Junior Chamber of Commerce.

Street decorations in Worcester, Mass., cover about a mile of streets in the downtown shopping section. They consist of two 15-foot spruce trees attached to the top of each trolley support pole. The trees are illuminated with thirty 30-watt bulbs of varied colors, topped by a brilliant star. Blinkers are used on these bulbs to give a better lighting effect. The bottoms of the trees are festooned with laurel roping and set in a large red tub. This year the trees will be illuminated from November 24 up to and including December 31, says Secretary H. L. Gustafson of the Chamber of Commerce. The cost of the decorations, installation, illumination and removal is approximately $4,440, or 21 cents per capita, which is raised by a special committee of the Mercantile Bureau of the Chamber of Commerce. The city of Worcester cooperates by subscribing for the decorations around City Hall.

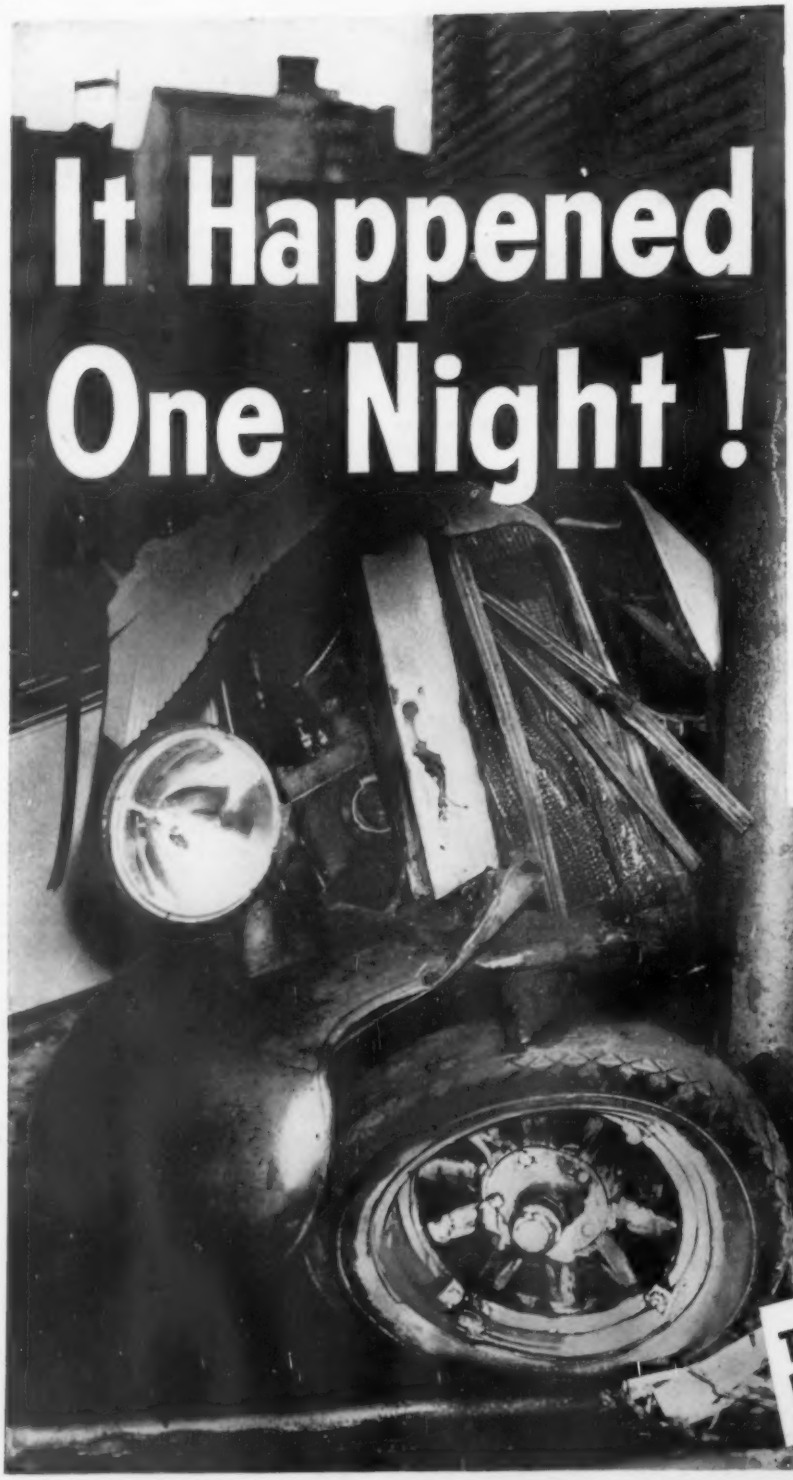
The streets of Worcester have been called "Christmas Tree Lane" because of the colorful display presented by these living trees.

Quincy, Mass., lighted 140 trees on December 1, says Secretary E. J. MacEwan of the Chamber of Commerce. Each tree is set in a pipe rising from an iron casting anchored to the sidewalk. The lowest branches are 6½ feet above the sidewalk, and each tree is lighted by 25 colored inside-frosted 25-watt lamps. "We are lighting 50 more trees than last year, when more than 20 cities asked for details of our plan. The first cost amounts to $21 per tree, and $9.50 per tree the second year, including current furnished by the Quincy Electric Light & Power Co."

This year the Retail Merchants Division of the Chamber of Commerce supplements the municipal lighting program with specially decorated du-Pont Cel-o-glass cut-outs placed over the street lights, featuring Santa Claus Lane along a 13-block area in the center of the city. There is also a huge silver Singing Christmas Tree in the center of Columbus Plaza, facing the Pennsylvania-Reading railroad station. Colored floodlights are around the tree, and loudspeakers hidden among the branches broadcast Christmas carols during afternoons and evenings two weeks before Christmas Day.

Since last year, Niagara Falls, N. Y., has improved its street lighting to such an extent that the present brilliance requires special Christmas lighting, and strings of 60-watt red bulbs alternate with strings of 60-watt green bulbs, with flasher buttons inserted in each string. Concerning the new street lighting, described in this magazine last July, Secretary R. D. House of the Niagara Falls Chamber of Commerce, writes: "We modestly claim the best-lighted business streets in the world, with an average of more than 5 footcandles on Falls Street. Each pole carries two luminaires at a height of 22½ feet above the street, with poles 70 feet apart on both sides of the street in opposite arrangement."

Thus in the midst of grace and happiness, the business necessities of the coming eleven months are keenly borne in mind. Christmas lighting of the streets opens the pocket as well as the heart, and city officials will do well to encourage such types of display.



WHEN the sun goes down, Public Safety goes on the spot. The number of fatal accidents at night is rapidly increasing. Crime, too, lurks in the dark. Fire threatens.

Yet the cost of modern Public Safety equipment is only a tiny fraction of the losses in life and property it would prevent.

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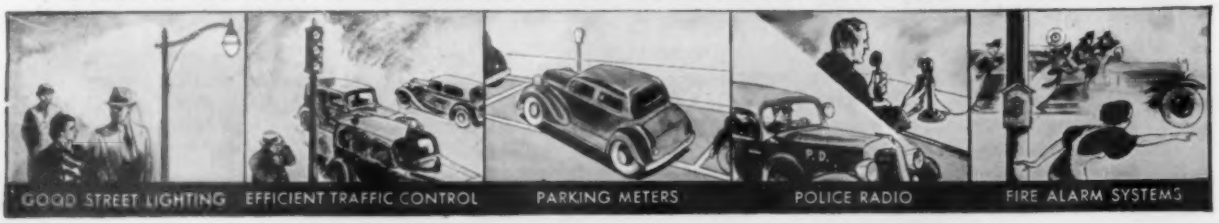
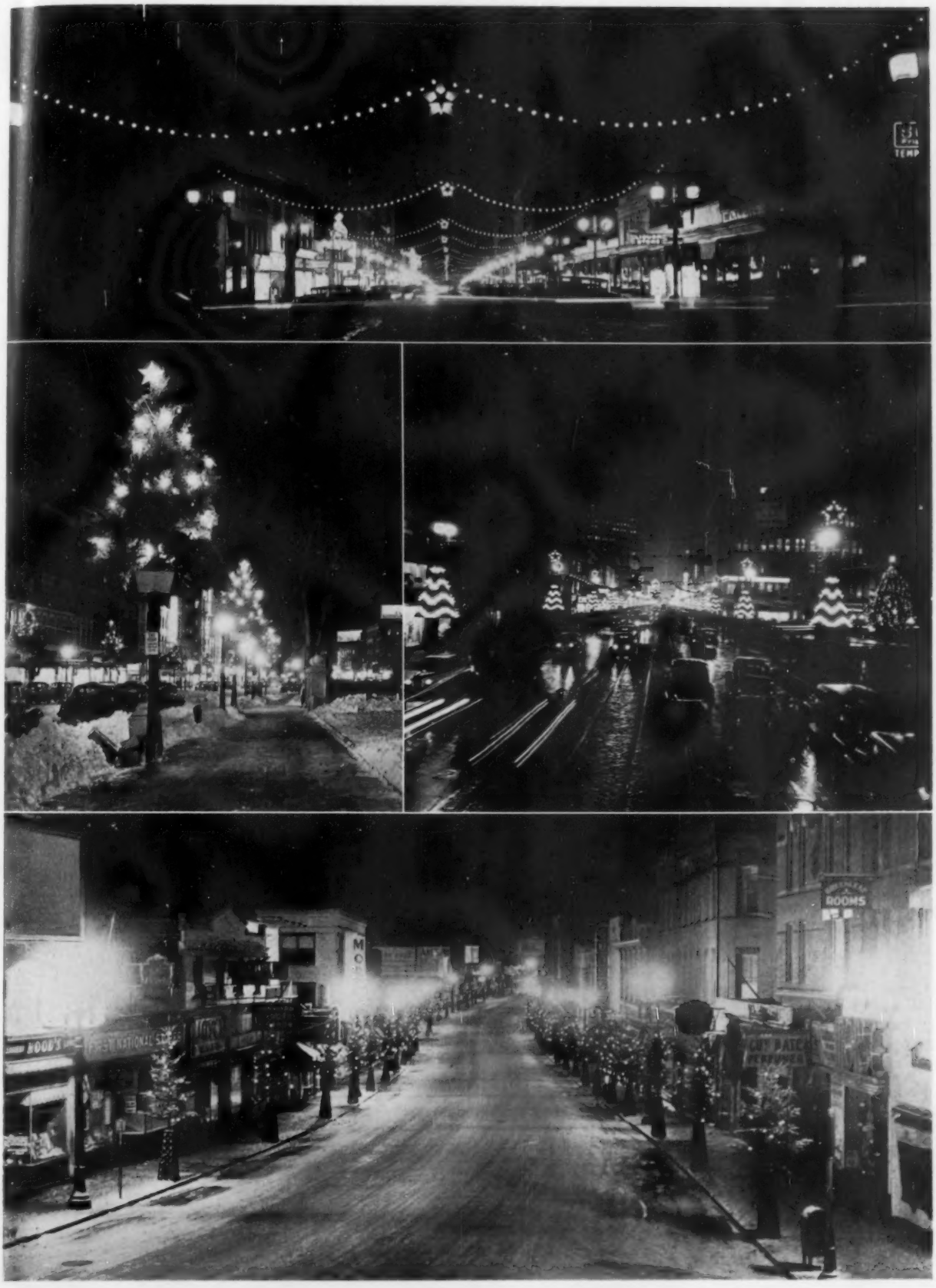




Christmas Lights of Niagara Falls, Worcester, Buffalo and Quincy

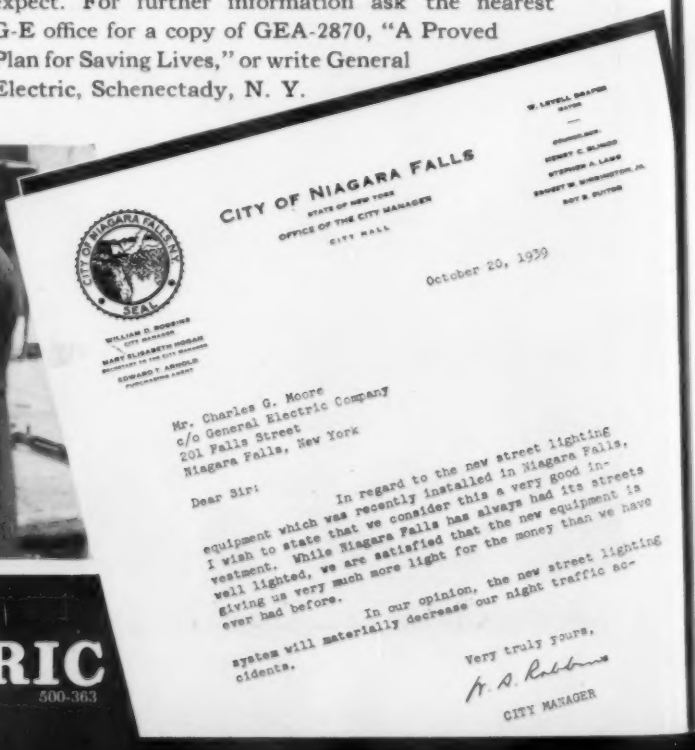
See page 103

Niagara Falls Doubles Light on 23 Miles of Street at Little Added Operating Cost

NIAGARA FALLS had one of the country's *finest* luminous-arc street-lighting systems, yet it recently relighted 23 miles of street for *better* night traffic safety. More than 1000 arc lamps were replaced with modern, efficient incandescent luminaires. The results? Double the illumination on the street surfaces, and uniform pavement brightness—two important factors that greatly increase safety and facilitate the movement of night traffic. The increase in operating cost? It's negligible because today's G-E luminaires direct 115 per cent more of the light on the pavement. Wasteful skyward light is eliminated.

Let us help you modernize your street lighting; it's easier than ever before, and costs less than you might expect. For further information ask the nearest G-E office for a copy of GEA-2870, "A Proved Plan for Saving Lives," or write General Electric, Schenectady, N. Y.

City Manager W. D. Robbins, J.E.Costello and C. H. Anderson of Buffalo Niagara Electric Corp., and Adin W. Chase, City Electrician, looking at Form 81 luminaire



CITY OF NIAGARA FALLS
STATE OF NEW YORK
OFFICE OF THE CITY MANAGER
CITY HALL

October 20, 1939

Mr. Charles G. Moore
c/o General Electric Company
201 Falls Street
Niagara Falls, New York

Dear Sir:

In regard to the new street lighting equipment which was recently installed in Niagara Falls, I wish to state that we consider this a very good investment. While Niagara Falls has always had its streets well lighted, we are satisfied that the new equipment is giving us very much more light for the money than we have ever had before.

In our opinion, the new street lighting system will materially decrease our night traffic accidents.

Very truly yours,
W. D. Robbins
CITY MANAGER

GENERAL ELECTRIC

500-363

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Residence District—School —Incidental Business

NEW YORK.—*Flagg v. Murdock*, Supreme Court, Kings County, reported in *New York Law Journal*, October 23, 1939, page 1265. Action No. 1.—This action involves a dancing school conducted in the cellar or basement of a multiple dwelling in a residential district. The Tenement House Commissioner ordered the petitioner to discontinue an office on one of the upper floors, and a dancing studio or school, "for business purposes," located in the basement of the building. The dancing teacher lived in one of the apartments above. The petitioner did not appeal from this order to the Board of Standards and Appeals, but sought to obtain from that Board a variance from the order, on the ground of practical difficulties and unnecessary hardship.

The school is patronized mostly by small children, many of whom reside on the premises. Fees are charged for the instruction. A school is specifically permitted by the Zoning Resolution in a residential district, but the Board decided that this dancing school was not such a school as was contemplated in the Resolution, saying that instruction is given in a school teaching markmanship or how to drive an automobile, yet such schools would not be permitted in a residential district; adding that in its opinion the school referred to in the Resolution was such as came within the supervision of the Board of Regents. The word "school" has been defined as a place where instruction is given the young: "any place or means of discipline, improvement, instruction or training."

It has been held that the teaching of singing or music is a profession and not a business, trade or industry as these words are used in the Zoning Resolution or common parlance. There is nothing in the record of this case to show that this dancing school is so conducted as to become a business or industry—if this appeared to be the case, an entirely different situation would be presented.

The Board of Standards and Appeals denied this application for a variance on the ground of hardship and practical difficulty, for the reason that there did not appear to be any such hardship or difficulty, and in this the Court upholds the Board. The Court did not confine itself to this sole question, but considered the petitioner's claim that the school was a normal permitted use in a residential district, no variance of the Zoning Resolution being necessary for such a use there; and this claim is upheld by this Court.

Furthermore, the basement rooms in the building may be used for recreation, and children's dancing lessons come within the scope of both recreation and education.

Action No. 2.—This action involves the use on these premises of a barber, a tailor, a gift shop, and a restaurant, all in the interior of the building. The Tenement House Commissioner ordered the petitioner to discontinue these uses as contrary to the Multiple Dwellings Law and the Zoning Resolution. The petitioner claims relief on the ground of hardship and practical difficulties, but this Court finds that there are no such difficulties.

Nor can these businesses lawfully be conducted in a multiple dwelling or a residential district. There is much to be said for the desirability of affording an opportunity to tenants, especially children, to play and have their hair cut or buy soda or candy without leaving the safely enclosed inner court of the building, and these activities are not visible from outside the building or accessible from the street except from the inner court, and are patronized not by the general public but only by tenants and their guests. The outward appearance of the premises is free from all marks of commerce or business use. Nevertheless, these uses are not "accessory uses" in a residential zone, the Zoning Resolution not permitting businesses in that zone as accessory uses. A hotel may have such uses, but a multiple dwelling is not a hotel.

It is not apparent how these uses can be objectionable to neighboring property owners. The Court has inspected the premises, and is of the opinion that they are desirable, located as they are. They are, however, unlawful, and the only relief is by legislative action. The situation presented here is perhaps one not contemplated when the Building Zone Resolution was adopted. As, however, to the so-called valet shop, it seems that tenants leave clothing in this room, and a valet collects and takes it away off the premises, to be cleaned and pressed; so that this room can hardly be said to be used for business.

Residence District— Garage—Variance

UTAH.—*Walton v. Tracy Loan and Trust Co.* 92 Pac. 2d, 724 (Supreme Court, July 12, 1939).—The Tracy Company is appealing to the Board of Appeals for a variance to allow it to erect a public garage on its property in a residential zoning district, in which the erection of such buildings is forbidden.

Held that the Board had no power to grant such a variance, as this would be in fact a re-zoning of the district. This the legislative body of the community only can do, and it cannot delegate that power. Variances are confined to changes within the spirit of the ordinance, and the authorization of such a structure contrary to the express terms of the ordinance, is contrary to its spirit.

The Municipal Bond Market

Banks Participate in Housing Loans

A UNIQUE feature of the municipal bond market last month was the first large-scale invitation ever extended to private capital to participate in financing the construction of public low-rent housing projects. A group of 11 local public housing agencies which had signed loan contracts with the United States Housing Authority invited sealed proposals for six-months, non-callable temporary loan notes aggregating about $50,000,000. These loan notes are being issued in order to reduce carrying charges during construction on projects approved by the United States Housing Authority, in anticipation of the permanent financing through USHA funds.

On November 14 the Chemical Bank & Trust Company, of New York, heading a nation-wide group of about 50 banks, purchased these notes at an interest rate of slightly less than 6/10 of 1 per cent per annum.

The local housing authorities in the following cities participated in the initial offering: Atlanta, Ga.; Charleston, S. C.; Charleston, W. Va.; Chicago, Ill.; Washington, D. C.; Louisville, Ky.; Macon, Ga.; New Orleans, La.; Peoria, Ill.; Philadelphia and Pittsburgh, Pa.

Recent sales of other new issues, as reported in the November issues of *The Bond Buyer* include:

Amount	Borrower and Purpose	Rate (%)	Term (Yrs.)	Basis (%)
$300,000	Massachusetts, Flood Protection	1	2-6 Ser.	.85
257,000	Worcester, Mass., Relief	1	5.33 Avg.	.99
300,000	Elgin, Ill., Bridge	2	11.25 Avg.	1.94
3,000,000	Chicago, Ill., Water-Works System Certificates of Indebtedness	2.25	10.66 Avg.	2.15
500,000	Cranston, R. I., Sewerage	2.5	17.16 Avg.	2.30
120,000	Fallsburgh, N. Y., Water	3.20	20.25 Avg.	3.15
140,000	Beaumont, Texas, Airport, Assembly Hall and Recreation Building, Sewerage, Wharf and Dock	3.5	10.5 Avg.	3.274
300,000	Lockhart, Texas, Water and Light Revenue	4	7.8-10.8 O.-A.	4
500,000	Gallup, N. Mex., Public Utility Company Revenue	4.5	12.25 Avg.	4.5
175,000	Metuchen, N. J., School	4.10	12 Avg.	4.08

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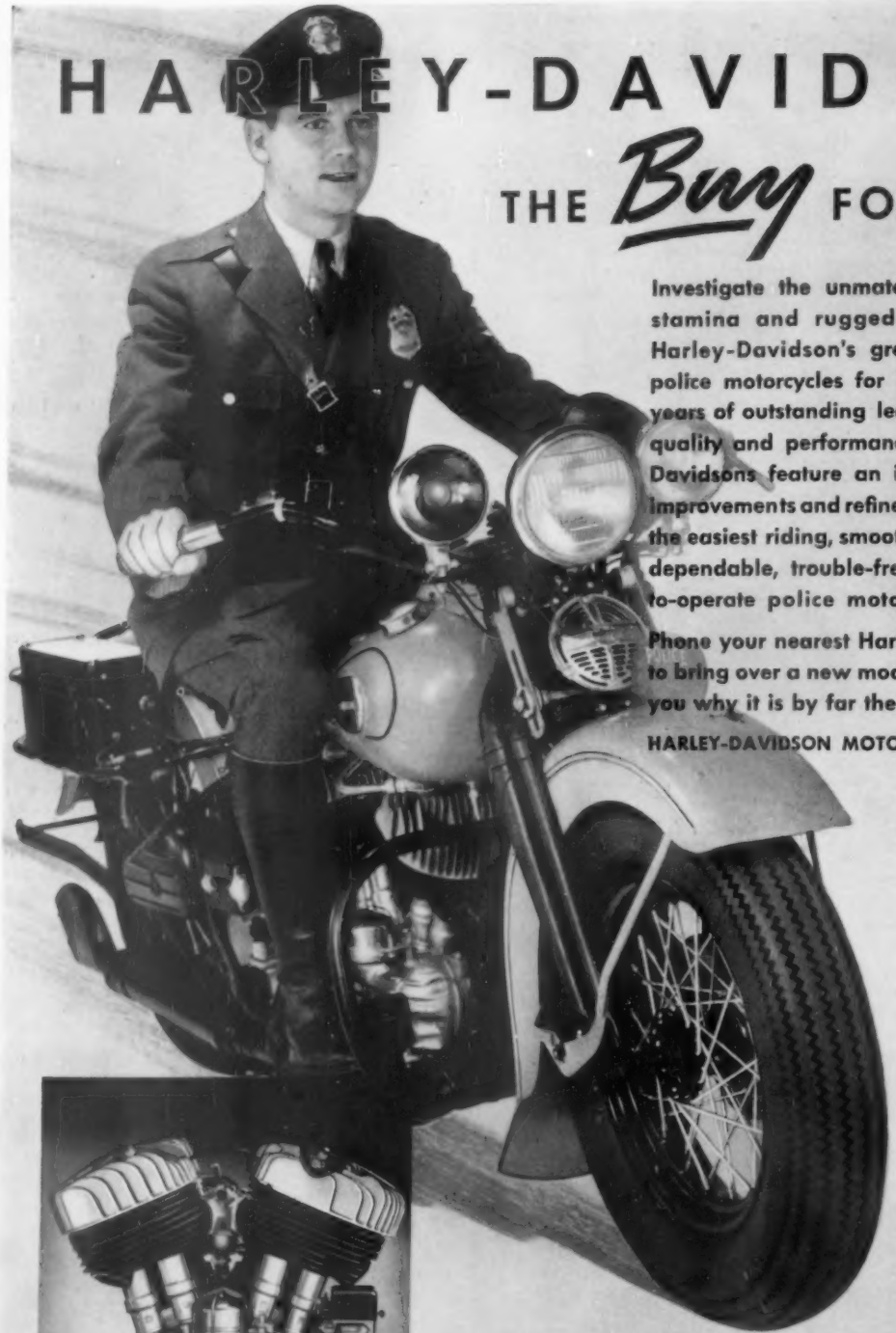

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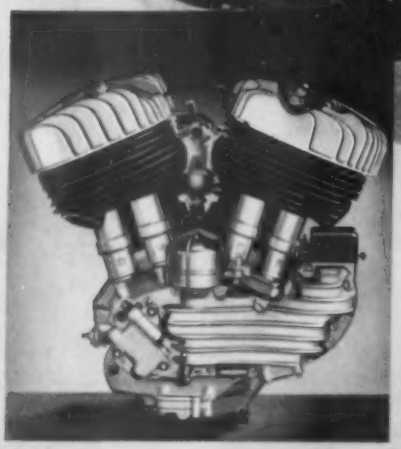

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THE POLICE MOTORCYCLE

Municipal Law Notes and Decisions

Prepared by National Institute of Municipal Law Officers, Washington, D. C.

John A. McIntire and Charles S. Rhyne, Legal Counsel

Torts—Notice of Claim Statutes

A recent Rhode Island decision sharply defines the fundamental purpose of statutes requiring notice to the municipality as a condition precedent to filing suit to enforce any tort liability. This decision points out that the statute is designed to give to the municipality notice of the facts of the accident in order that it may be informed so as to undertake a timely investigation, locate witnesses, etc. It is not the purpose of such statutes to give notice of the theory on which the cause of action is based. While in the notice operates as a condition precedent to the maintenance of the suit, it is to be distinguished from the kind of notice that is afforded by the pleadings in the action itself. *Brickle* v. *Quinn*, 7 A. (2d) 890 (R. I. July 5, 1939).

Such statutes have been receiving increased attention recently. The practical effect of such statutes is of course to afford a peculiar type of short statute of limitations which may serve as a bar to claims against cities for injuries. The notice required by such statutes is to be clearly distinguished from notice of defects which must always be proved actually or constructively in order to sustain municipal liability for injury resulting from defective conditions of streets and highways. An example of the confusion resulting from a failure to so distinguish is found in the case of *Lyon* v. *City of Binghamton*, 10 N. Y. S. (2d) 951 (Mar. 8, 1939). In this case the Court held that a city had notice sufficient to satisfy the notice of claim statute where the condition complained of was caused by city's agents.

While the notice of the claim need not include a recital of the cause or theory of the action, nevertheless, material variation between the facts set forth in the notice and those pleaded or proved is fatal. *Harrington* v. *City of Battle Creek*, 284 N. W. 680 (Mar. 9, 1939). What is, in fact, such a fatal variance depends upon the particular circumstances. A notice which missed the scene of the accident by a quarter of a mile was invalid. *Keller* v. *Tomaska*, 19 N. E. (2) 442 (Feb. 14, 1939). On the other hand, where the word "north" was used when the claimant meant "south," the Court of Appeals of Alabama felt there was no fatal variance, but they were immediately reversed by the Supreme Court. *City of Birmingham* v. *Jeff*, 184 So. 278 (Mar. 29, 1938), reversed, 184 So. 281 (June 16, 1938). While the Court in *Lyon* v. *City of Binghamton, supra*, found some kind of constructive notice to satisfy the requirement of the statute, it has been held that a notice, though correct as to content, serves no purpose if not verified. *Rockwell* v. *City of Syracuse*, 12 N. Y. S. (2d) 204 (May 17, 1939).

Questions of exemption from the requirements of the notice statute or an effective waiver of its provisions have been considered in several recent decisions. *Adonnino* v. *Village of Mount Morris*, 12 N. Y. S. (2d) 658 (June 10, 1938); *City of Waco* v. *Thralls*, 123 S. W. (2d) 462 (Apr. 20, 1939) (waiver of notice within province of governing body). *White* v. *City of Auburn*, 8 N. Y. S. (2d) 575 (Dec. 21, 1938) (application of notice requirement to claim of infant). *Cf. Adonnino* v. *Village of Mount Morris, supra.*

The details as to the content of the notice required and the period of time following the accident within which the notice must be filed vary considerably in the statutes now in force. Where the requirements of the notice statutes have been extremely technical and have been insisted upon with great particularity, a tendency has been observed on the part of the courts to be equally technical in construing the statutes against the city. It has even been said that some courts have gone so far as to imply a requirement of counter notice by the city to a claimant of the city's intention to take advantage of a technical defect in the notice, failure to comply with which waives the effect of the defect.

Assessments—Declaration of Invalidity

Because of the admitted confusion and irregularity in the assessment itself, making it impossible to determine the amount of taxes due, if any, the plaintiff satisfies all requirements by stating his willingness to pay any taxes which the court will find are due, although the plaintiff seeking relief is usually required to pay the taxes properly due and owing before seeking relief from the invalid levy. *Charles* v. *Crescent City*, 93 P. (2d) 129 (Calif. 1939).

Certiorari—To Whom Directed

A writ of certiorari to review the action of a joint sewer commission of two towns directed to the body as such was defective in that the joint commission had statutory existence only as a "joint meeting." This defect was cured, however, by the fact that the writ was directed to the individuals in charge, the members of the "meeting," and the return brought up the minutes of the meeting complained of. *Board of Commissioners of Town of Nutley* v. *Ernst*, 8 A. (2d) 708 (N. J. Oct. 16, 1939).

Civil Service—Relief Positions

City of New York should have filled positions of supervisors of home relief from list of those passing civil service competitive examinations for supervisory investigators rather than by continuance of temporary employees where duties and requirements of the two positions were essentially the same. *Ackerman et al* v. *Kern et al*, 22 N. E. (2d) 247 (N. Y.).

Council Action—Approval of Claims

The council is the only body having authority to bind the city and it must act as such. Approval of claims for payment by the mayor and city clerk or by the members of the council individually is of no effect. *McAllister* v. *City of Frost*, 131 S. W. (2d) 975 (Tex. Civ. App. Sept. 28, 1939).

Debt Limits—Funding Bonds

Issuance of bonds by an Illinois village to fund a tort judgment against it does not increase the aggregate indebtedness of the corporation within the meaning of the constitutional limitation on indebtedness. *Elmhurst Nat. Bank* v. *Village of Bellwood*, 23 N. E. (2d) 41 (Ill. Oct. 13, 1939).

Emergency Appropriations

Where city of Miami Commission made a purported emergency appropriation of $2,000 to hire attorneys to conduct special litigation for the city, the appropriation was void, since no emergency existed in fact. *Fuller et al* v. *Gardner*, 190 So. 442 (Fla.).

Eminent Domain—Abatement of Grade Change as Nuisance

The remedy of an adjoining property owner whose property is damaged by a change in grade is by a procedure to seek compensation under the eminent domain clause of the state constitution and not by an action to have the change abated as a nuisance or in the alternative to be paid damages equal to the cost of abatement. The liability of the city for injury from such changes in grade is for a permanent and unabatable condition. *Branyon* v. *Kirk*, 191 So. 345 (Ala. Oct. 5, 1939).

Foods

Ordinance of the city of Ocala prohibiting the keeping of any meat in a store or market in the city or within a mile of its corporate limits unless the meat bears the inspection stamp required by Federal law or the stamp of the city meat inspector, held reasonable and valid. *State ex rel. Hogan* v. *Spencer*, 190 So. 506 (Fla.).

Housing—State Cases Still Unanimous

Low-rent housing or slum-clearance legislation providing for the creation of the Housing Authority of the County of Los Angeles is held valid. *Housing Authority of County of Los Angeles* v. *Dockweiler*, 94 P. (2d) 794 (Sup. Ct. Cal. Oct. 11, 1939). See prior note on Housing cases in The American City, October, 1939.

Mandamus—Correction of Council Minutes

Although mandamus is the proper remedy to force the clerk and council to reinstate minutes erroneously changed, the Court held the Council had broad power to change the minutes by proper action to make them speak the truth, and the writ was refused inasmuch as it appeared that the action of the Council was according to law. *Harris* v. *Thompson*, 191 So. 403 (Ala. App. Oct. 3, 1939).

Mandamus—Injunction

Mandamus was held not to be available as a remedy to force a city manager or building inspector to prevent occupancy of a dangerous building in order to protect the adjacent owner. If the facts warrant relief, a taxpayer's action for injunction is indicated as the proper procedure. *Courtellini* v. *City of Niagara Falls*, 14 N. Y. S. (2d) 924 (Sup. Ct. App. Div. 1939).

Mandamus—Presumption of Validity of City Ordinance and Action

When a city ordinance and the action of the council in refusing a permit under the ordinance are not before the Court, the Court will presume the action of the city valid in a mandamus action against the council. The petitioner must sustain the burden of showing that the action was arbitrary or unjust. *Bruno* v. *City Council of Niagara Falls*, 14 N. Y. S. (2d) 842 (Sup. Ct. Oct. 4, 1939).

Pensions

San Diego charter provides that the widow of a deceased retired fireman is entitled to a pension if she was married three years prior to the fireman's retirement. A woman was married to a fireman more than three years prior to his retirement, subsequent to his retirement divorced him and married another, on death of a second husband remarried the fireman and was married to him at his death. The Court held that she was not entitled to the pension, since the divorce decree dissolved all obligations arising from the original marriage. *Lovell* v. *Parrish*, 93 P. (2d) 165 (Cal. App. 1939).

Water Service

Under Utah statutes city has no power to adopt ordinance prohibiting the turning on of water until all charges incurred by former tenants or former owners are paid. *H. O. L. C.* v. *Logan City et al*, 92 Pac. (2d) 346 (Utah).

Zoning—Effect of Amendment

Contestant of a municipal ordinance must sustain the burden of showing its unreasonableness, and where an amendment to a zoning ordinance is adopted after an application for a permit but before application to the court for a writ of mandamus, the amendment will be operative as a bar to the writ. *Eastern Boulevard Corp.* v. *Willaredt*, 8 A. (2d) 688 (N. J. Oct. 16, 1939).

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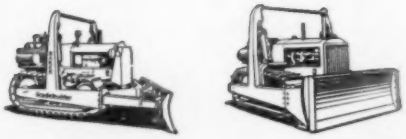

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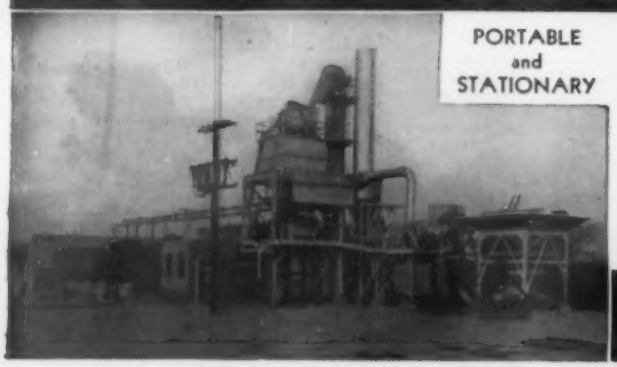

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Municipal and Civic Publications

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Fire Apparatus

Specifications for Automobile Fire Apparatus 1939.—Recommended by National Fire Prevention Association, 60 Batterymarch St., Boston, Mass. 26 *pp.* + *Appendix,* 13 *pp.* 40c *a set, or* 35c *in lots of* 12 *or more sets.*

The principal feature of this new edition is that the specifications are arranged in a form that makes them easy to use in connection with purchases made by a fire chief or a municipal purchasing agent. The four principal types of fire apparatus used by cities are included: (a) pumper (triple combination); (b) ladder truck (city service); (c) ladder truck (aerial); (d) ladder truck and pumper (quadruple combination). Each set of the specifications contains 39 sheets, 8½ by 11 inches. In use, a title sheet provides space on which the number of each type of apparatus may be listed, and there is a set of 4 sheets for each type of apparatus, in addition to 8 pages of provisions applying to all types of apparatus. It is only necessary to fill in the data required by the city as to size of pumps, body style, accessories, and the like. Then the sheets may be put in the hands of all manufacturers invited to bid on the apparatus.

Government and Administration

The Government and Misgovernment of London.—By William A. Robson. George Allen & Unwin, Ltd., Museum Street, London, England. 1939. 484 *pp.* 15s. *net.*

American municipal officials, who have often been urged to emulate the efficiency of the English public service, will find the other side of the picture presented in this scholarly and constructive study by a leading British authority on administrative law. As the publishers point out on the jacket of the book:

"The Metropolitan Region [of London] contains a population larger than any one of fifteen European nations and it is at present struggling along with obsolete municipal machinery from the 'horse and buggy age.' This book is the first constructive exploration and analysis of the position."

In the concluding chapter on "The Prospect of Reform," the far-reaching improvements in the municipal structure of New York, introduced in the present city charter, are discussed as "immensely superior to the effete arrangements which continue to exist in London."

A problem acute on both sides of the Atlantic is emphasized when the author points out that "land values and compensation are the two great obstacles in the way of imposing social control on the use of land as things now are in Great Britain."

Among other subjects discussed by Dr. Robson, as to which local government in America has much to learn from British achievements and mistakes, are port and river authorities and other *ad hoc* bodies, public works administration, transport, public health, town planning, housing and slum clearance. To problems of decentralization and satellite towns important chapters are devoted.

Taxation

Exemption and Preferential Taxation of Homesteads. 15 *pp.*

Property Taxation of Intangibles. 13 *pp.*

Exemption and Preferential Taxation of Factories. 13 *pp.*

National Association of Assessing Officers, 1313 E. 60th St., Chicago, Ill. 1939. 50c *each.*

Each of these pamphlets outlines the history, and describes the various forms in different states, of the particular type of taxation with which it deals. The material covers bills relating to the three types of taxation which were passed in 1939 legislatures. The bulletin dealing with homestead taxation discusses the effect of homestead exemptions on the general property tax base; that on taxation of intangibles discusses the arguments for tax preference.

Sewage Treatment

The Dissolved Oxygen Sag—An Analysis.—By Gordon M. Fair. Reprinted from "Sewage Works Journal," May, 1939. Apply to Graduate School of Engineering, Harvard University, Cambridge, Mass. 1939. 461 *pp.* 10c.

A detailed mathematical analysis of the relation between biochemical oxygen demand of polluting materials discharged into bodies of water, and the revival of the polluted body of water by atmospheric re-aeration. The author fortunately summarizes the mathematical analysis by a non-mathematical generalization which permits the average sewage-works operator and non-technical official to apply the results to the stream or lake into which the local sewage-works effluent flows.

Residential Neighborhoods

The Structure and Growth of Residential Neighborhoods in American Cities.—By Homer Hoyt, Principal Housing Economist, Division of Economics and Statistics, Federal Housing Administration, Washington, D. C. Apply to Supt. of Documents, Washington, D. C. 1939. 178 *pp.* $1.50; *limited number of copies.*

A contribution to the scientific analysis of the principles which govern the changing patterns of cities, this book has as its twofold purpose: first, to "suggest a series of techniques by which the *terra incognita* of a city may be mapped and charted, and the growth of its various parts measured"; second, "to develop principles of urban structure and growth that may give an insight into the causes of the present arrangement of land uses and residential neighborhoods in American cities." Based on the real property inventories and surveys, the study is divided into two parts, the first of which analyzes the present structure of the city and the relationship of its various land uses; the second investigates the movement and growth of the city and of its component parts —particularly of its residential sections. Numerous maps illustrating the text and included in the appendix demonstrate the technique and method of procedure that has been used.

Transportation

Report to the City of Seattle on a Plan for Modernization of the Seattle Municipal Street Railway with R. F. C. Financing, 1939.—The Beeler Organization, Transit Engineers and Consultants, 155 E. 44th St., New York. 1939. 65 *pp.*

This plan for a new transit system for Seattle covers routing plans, tentative operating schedules with estimated revenue and cost of operation, estimates of the cost of equipment and other items incidental to modernization, and recommendations as to the general type, character, and capacity of the equipment required. The plan would utilize 235 electric trolley coaches and 130 motor coaches. (See also p. 47 of this issue.)

Smoke Abatement

Manual of Ordinances and Requirements in the Interest of Air Pollution, Smoke Elimination, Fuel Combustion.—Smoke Prevention Association, 139 N. Clark St., Chicago, Ill. 1939. 172 *pp.* 50c.

This annual volume again contains a model smoke abatement ordinance and answers to questionnaires sent to 200 representative cities on such aspects of their smoke-abatement regulations as the smoke densities they prohibit, requirements for the installation of fuel-burning equipment, personnel of smoke abatement forces, etc. One of the subjects covered in the papers read before the annual convention of the Smoke Prevention Association, published in the Manual, is the effect of smoke-polluted air on health, particularly in cities. Of special interest in this number are detailed descriptions of methods of measuring air pollution.

Street Construction

Cost of Operating Rural-Mail-Carrier Motor Vehicles on Pavement, Gravel and Earth.—By R. A. Moyer and Robley Winfrey, Research Associate Professors of Civil Engineering, Iowa Engineering Experiment Station, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa. 1939. 56 *pp. Free.*

From an analysis of operating-cost records of 248 automobiles operated by rural mail carriers in Iowa, covering 170 routes, on pavement, gravel and earth road surfaces, this report concludes that costs are decidedly reduced for vehicles operating on paved roads. It analyzes the relationship of type of roadway and costs to miles and rates of travel, weather, number of stops, load, amounts of gasoline and oil used, and expenses incurred for tires, maintenance, garage, license, taxes, insurance, depreciation, interest, and extra help. The amount of traffic volume necessary to justify changing from earth to gravel or pavement, and the cost of snow removal, are determined.

1939 *Proceedings of the National Paving Brick Association, Columbus, Ohio, Feb. 2 and 3.* 1939.—*National Paving Brick Association, National Press Bldg., Washington, D. C.* 1939. 97 *pp. Free.*

Recent developments and improvements in brick paving and reconstruction, and results of investigations at the Research Bureau of the National Paving Brick Association at the Ohio State University Experiment Station are described in this pamphlet. Numerous illustrations show techniques and results of this type of paving.

Housing

Local Housing Authority Administration—A Manual of Early Experience.—National Association of Housing Officials, 1313 E. 60th St., Chicago, Ill. 1939. *vii* + 116 *pp.* $2.50.

In 1933, the first housing authority was established in the United States. Because there was little precedent and experience to guide them, authorities have since then been working out, from their own experiences, desirable practices and procedures. This valuable manual—the first on the subject—is based on these experiences and those of administrators in other fields of public service. Intended as only a preliminary edition, it is divided into five main chapters which deal comprehensively with Functions; Organization; Administrative Personnel; Part-Time and Special Personnel; and Administrative Relationships. Two other chapters—on Finance and Administrative Procedure—are now in preparation. To allow for their future addition—and for any other additions and revisions—the manual is in loose-leaf form.

Traffic

Parking Meters as City Legal Problems.—National Institute of Municipal Law Officers, 730 Jackson Place, Washington, D. C. 1939. 28 *pp.* $1.00.

To take the place of Report No. 12, "The Legal Status of Parking Meters," published in 1936, the Institute has published this report, which surveys the legal aspects connected with the adoption of parking meters. It summarizes legal opinion on the subject, and discusses in detail, citing cases, the questions of: "Free Use of Streets," Rights of Abutting Owners, Power to Enact Ordinance, Right of Taxpayer to Attack the Program, Fees—Revenue Taxes or Regulatory License Fees. Besides a description of meters and their purpose, the report contains also a table of parking-meter fees in Oklahoma City; statement of receipts and expenditures of parking-meter funds in Portland, Ore.; list of cities with parking meters; the Miami, Fla. parking-meter ordinance; and statements describing municipal experience with parking meters.

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Street Construction

Research Series Number 5—Materials; Construction Series Number 49—Design and Construction; and Construction Series Number 50—Equipment. The Asphalt Institute, 801 Second Ave., New York. 1939. 60, 56 *and* 72 *pp., respectively. Free.*

Reprinted from the "Proceedings of the Twelfth National Asphalt Conference," listed in the November issue of THE AMERICAN CITY. They comprise 23 papers in all, covering "Twenty Years of Progress," the Conference theme.

Roadside Development

Roadside Improvement by Freeways and Parkways.—Nov., 1939, issue of Planning Broadcasts, bulletin of the American Planning and Civic Association, 901 Union Trust Bldg., Washington, D. C. 4 *pp.*

In 1937 New York and Rhode Island adopted laws giving authority to the state highway commission—or other appropriate body—to build limited access roads. The use for business purposes of the land abutting such highways is automatically prevented. This year Connecticut has passed a similar law. The bulletin publishes the acts of the three states, and the brief act suggested by the American Planning and Civic Association's Committee on Roadside Improvement.

Recreation

Report on the First Annual Swimming Pool Conference, State of Illinois. Division of Sanitary Engineering, State Department of Public Health, and School of Physical Education and Physical Plant Departments, University of Illinois. Apply to State Department of Public Health, Springfield, Ill. 1939. 40 *pp.*

With the purpose of popularizing swimming as a healthful recreation and of informing those interested of recent developments, this conference was held. Published talks cover the following: the doctor's point of view; the promotion of a swimming pool; pool operation records and reports; personnel; legal responsibility.

Waterfronts and Recreation

Shore and Beach, October, 1939, containing Proceedings of the Conference in New York City. The American Shore and Beach Preservation Association, 319 Magazine St., New Orleans, La. 160 *pp.* 50c.

Of interest to municipal officials are several talks, printed in these proceedings, on city beaches and waterfront developments, in New York, Los Angeles, Chicago, Cleveland. Beach erosion, beach maintaining apparatus and water safety are other subjects discussed.

Ordinances

Regulation and Licensing of Automobile Parking Lots. 7 *pp.*

Solicitation for Charitable Purposes. 11 *pp. The United States Conference of Mayors, 730 Jackson Place, Washington, D. C.* 1939.

The first of these publications reproduces four typical parking lot ordinances—those of St. Paul, Detroit, San Francisco, and Buffalo. The second gives a summary description of regulation of solicitation for charitable purposes, in cities in the country, and includes ordinances of New York City, Los Angeles and St. Louis—believed to be typical.

Finance

Financial Problems of the City of Detroit in the Depression.—By Egbert S. Wengert, LL.B., Ph.D., Department of Government, Wayne University. Detroit Bureau of Governmental Research, Inc., 5135 Cass Ave., Detroit, Mich. 1939. 56 *pp.* $1.00.

This report analyzes the state of Detroit's finances in the prosperous years leading to the depression, outlines the steps that were taken to meet depression conditions, and suggests needs for meeting resulting present and future financial problems. The following aspects of the financial situation are investigated in detail: Debt Structure; Assessment and Collection of Taxes; Grants-in-Aid; Depression Problems of Detroit's Expenditures.

Police

The Police Blue Book, 1939-40.—*International Association of Chiefs of Police, 1313 E. 60th St., Chicago, Ill.* 1939. viii + 247 *pp.* $5.00.

To facilitate the exchange of information and the maintenance of communication between law-enforcement agencies, the International Association has issued this "directory of national, state and provincial, county and municipal police and other criminal justice agencies and their executive personnel in the United States, Canada, and Principal Foreign Countries." It lists 15,000 officials in about 5,500 jurisdictions, and lists also the population of the jurisdiction, number of employees, and number of patrol cars and motorcycles in use.

Rent Control

Rent Control in War and Peace.—By Edith Berger Drellich and Andree Emery. Prepared for the Laws and Administration Committee of the Citizens' Housing Council of New York. Apply to National Municipal League, 299 Broadway, New York. 1939. 125 *pp.* 50c.

Particularly timely, with the outbreak of European war, is this report of a study begun in October, 1937. It is concerned, however, with rent control not only during war but during any "emergency" when rents become excessive, causing hardship particularly to low-income tenants, and in acute cases affecting the balance of national economy. The present housing shortage and probable approaching rise in rents are analyzed with reference to the 1939 need for rent control. Working principles for future rent-control legislation are recommended. The report examines the housing shortage and rent speculation in this country and abroad, during and in the years following the World War, and evaluates the legislation and non-legislative measures that were passed to control this rent speculation.

Housing Legislation

Public Housing Laws.—By Joshua S. Chinitz and Edith B. Drellich, in cooperation with the Laws and Administration Committee, Citizens' Housing Council of New York, Inc., 470 Fourth Ave., New York. 1939. 61 *pp.* 50c.

Contained in this publication is an outline analysis summarizing in non-technical language the principal points in the United States Housing Act, New York State Constitution, and the Public Housing Law of New York State. A detailed index makes the volume particularly valuable for reference use.

Annual Summary of State and Federal Laws relating to Public and Private Housing.—Sub-Committee on Law and Legislation of The Central Housing Committee, 1601 Eye St., N.W., Washington, D. C. 1939. 114 *pp.*

To present the current status of housing legislation in the United States is the purpose of this Digest, which summarizes Federal laws and the laws of each state relating to low-rent housing and slum clearance; limited-dividend housing; home financing; building regulations; planning, platting and zoning. An Explanatory Statement, introducing the report, gives an over-all picture of housing laws in the country.

Street Trees

Study Report on Location of Street Trees.—Town Planning Board, Montclair, New Jersey. 1939. 8 *pp.*

This study concludes that "street trees, when planted in the future, should be located on the property side of the walk rather than in the space adjacent to the curb, and that more specific provision be made for their location with due respect for other street appurtenances, such as street lights, etc." It points out, with the aid of an illuminating diagram, the disadvantages of the old practice, and the advantages of the new, with respect to safety of vehicles, planting, maintenance and health of trees, construction and maintenance of public utilities, real estate values, beauty of street, interference with street lights, access to automobiles, vision clearance, widening of streets.

Business and Industrial Development

Selling a City to Industry—Attraction and Development of Manufactures.—By Herbert S. Swan, Industrial Consultant, 15 Park Row, New York. 1939. 21 *pp.* 15c.

A concise, to-the-point summary of those conditions in a community which are most significant for attracting new industries and developing existing ones, and what a community can do to develop them and sell them to industry. Factors are outlined that should be considered in organizing a campaign for new industries, one section being devoted to industrial organization by small cities. The reasons for the importance of having more than one industry in a community, and for a diversification of industries, are pointed out, and the value of the following are explained: development of port facilities; servicing present industries; erection of new factory buildings; peaceful industrial relations; organized machinery for industrial development and industrial leadership.

Planning

Community Planning—November issue of "Building America."—Society for Curriculum Study, Inc., 425 W. 123rd St., New York. 1939. 31 *pp.* 30c.

City planning—what, why and how—told briefly and dramatically in pictures and text. The story outlines the development of cities in this country—first planned, then growing haphazardly; tells what is wrong with today's cities and what they need; points out the elements of good community and national planning, and the citizen's part in bringing it about.

Planning Marches On!—New England Regional Planning Commission, 2100 Federal Building, Boston, Mass. 1939. 36 *pp.*

Five years ago, in 1934, regional planning was inaugurated in New England. This is a record of its inception, the function of the New England Regional Planning Commission, and its principal accomplishments in assembling basic data, in preparing in cooperation with other agencies preliminary plans for the region, and in the stimulation of planning—planning education. Appendices list publications of the Commission, and summarize planning activities of each state in the region.

Public Lands in Cuyahoga County.—By Bernard S. Edelman. Regional Association of Cleveland, Housing Center, The Mall, Cleveland, Ohio. 1939. 36 *pp.*

Another of the reports of the Association presenting basic data on which the Master Plan is to be built, this is the first inventory of the county's public lands. They are described—particularly as to quantity, location, distribution and adequacy—according to their various uses as parks and playgrounds, schools, libraries and public buildings, publicly owned utilities, public housing, vacant lands, streets. The problems of tax-delinquent and disputed land are considered. Recommendations are made for improving the present uncoordinated, inefficient and uneconomical system of public land ownership by no less than 60 different governmental agencies.

Taxation

The Assessment of Property for Ad Valorem Tax Purposes in Texas Cities.—By M. G. Toepel, Research Assistant in the Bureau of Municipal Research, The University of Texas, Austin, Texas. 1939. 261 *pp. Free.*

Contained in this publication is a thoughtful, thorough survey and evaluation of assessment in the composite Texas city—from the point of view of theory, law and practice. The principles of the system are examined, and its various phases—rendition and assessment, exemption, evaluation, the review of assessments. Other chapters are devoted to: the problem of the municipality as a unit of assessment and its overlapping in Texas with the county unit; the organization of a municipal assessment office; a program of reform for the improvement of the municipal assessing process in the state; an extensive bibliography.

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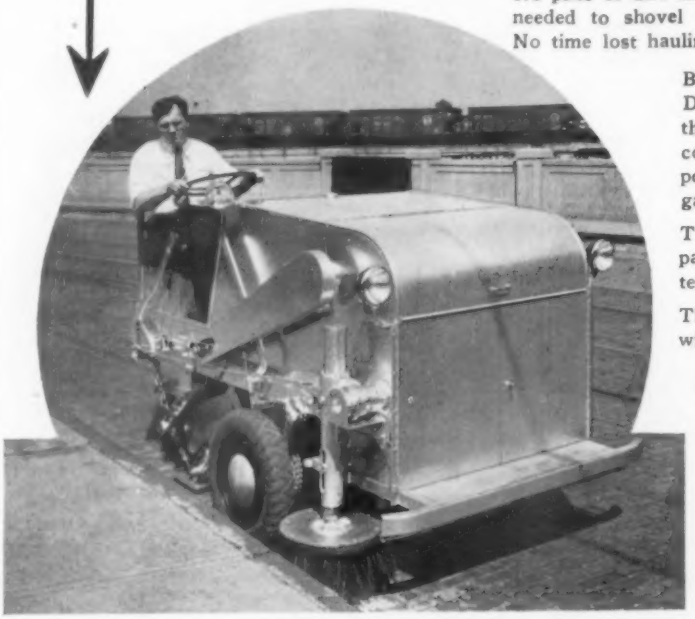

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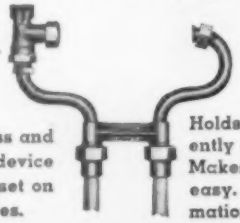

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Traffic

"Today's Traffic."—Edited by Traffic Engineering Bureau, Street and Highway Traffic Section, National Safety Council, Inc., 20 N. Wacker Drive, Chicago, Ill. Issued quarterly. First issue, June-July-August, 1939; second issue, September-October-November, 1939. 12 pp. Free to members; 5c for other copies.

This valuable new quarterly, to be issued March, June, September and December, contains news items and articles of special interest in the field of traffic, and announcements of conventions, traffic schools, contests, university fellowships, civil service examinations, and personal items about those engaged in traffic and safety work. Developments and progress of the study groups of the Street and Highway Traffic Section are reported.

Recreation

24th National Recreation Congress, 1939—Proceedings.—National Recreation Association, 315 Fourth Ave., New York. 1939. 189 pp. $1.00.

Something of the inspiration of recreation itself is caught in this record of the talks and discussions of the National Recreation Congress, whose general theme this year was Recreation and the American Way of Life. Among the various phases of recreation covered, the summaries of the discussions on Recreation Problems of Small Cities—5,000 to 30,000 Population, and on Recreation Planning in Housing Developments, are of particular interest to readers of THE AMERICAN CITY.

Trees and Forestry

The Cleveland Shade Tree Census, 1939.—Department of Parks and Public Property, Cleveland, Ohio, with the assistance of the WPA. Narrative Analysis and Recommendations by Arthur B. Williams, Ph.D., Economist, Cleveland Museum of Natural History. (Not available except on loan from the Cleveland Public Library System.) 1939. 121 pp.

Recognizing the esthetic and economic value of trees for a city, and the necessity of formulating a definite plan for its tree and forest development and maintenance, Cleveland has made this survey, upon which it expects to base such a plan. It contains information on the number, species, location and age of trees in the city; their condition—disease, and need of pruning, removal or other attention; the effect of smoke, traffic, prevailing wind-direction and other urban hazards on tree health; streets where trees are needed, and the kinds of trees which grow best under particular conditions; and observations on trees on private lawns.

Land Subdivision

Application for "Land Subdivision," published by The Committee of the City Planning Division on Land Subdivision Manual, American Society of Civil Engineers, should be made to the Society, at 33 W. 39th St., New York, instead of to 1916 S Street, N. W., Washington, D. C., as erroneously stated in the November issue of THE AMERICAN CITY. *1939. 75 pp. $1.20.*

Other Reports Received

CHICAGO, ILL.—"Fire Exposure Tests of Loaded Timber Columns."—Underwriters' Laboratories, Inc., sponsored by National Board of Fire Underwriters, 207 E. Ohio St. 1939. 23 pp.

PHILADELPHIA, PA.—Annual Report, Art Jury, 1938. 22 pp.

—A Survey of Hospital Services and Finances in the Philadelphia Area.—Sponsored by the Hospital Council of Philadelphia. 1939. 95 pp. $1.00.

PORTLAND, MAINE.—Municipal Activities, Report of City Manager, 1938. 95 pp.

SAN DIEGO, CALIF.—Civic Affairs, Report of City Manager, year ended June 30, 1938. 46 pp.

SCHENECTADY, N. Y.—"Your City Government, 1938." 50 pp.

SEATTLE, WASH.—Summary of Proceedings, Fourth Annual Institute of Government, University of Washington, July 12, 13, 14, 1939. Bureau of Governmental Research in cooperation with Extension Service. 1939. 44 pp.

WASHINGTON, D. C.—"Energy Resources and National Policy."—Report of the Energy Resources Committee to the National Resources Committee. v + 435 pp. $1.00. "Our Energy Resources." 42 pp. 10c. "The Structure of the American Economy; Part 1, Basic Characteristics." vii + 396 pp. $1.00. These three publications, 1939. Published by the National Resources Committee. Apply to Government Printing Office.

Conventions - - When and Where

Meeting is annual convention unless otherwise designated

DECEMBER 27-29.—PHILADELPHIA, PA.
Tax Policy League. (Bellevue-Stratford Hotel.) Exec. Sec., Mabel L. Walker, 907 Broadway, New York.

DECEMBER 28.—NEW YORK CITY.
American Water Works Association—New York Section. Winter meeting. (Commodore Hotel.) Sec., R. K. Blanchard, 50 W. 50th St., New York.

JANUARY 17-19, 1940.—NEW YORK CITY.
American Society of Civil Engineers. Sec., George T. Seabury, 33 W. 39th St., New York.

JANUARY 22-26.—STILLWATER, OKLA.
Oklahoma Water and Sewage Conference. (Oklahoma A. & M. College.) Sec-Treas., H. J. Darcy, State Health Dept., Oklahoma City, Okla.

JANUARY 22-26.—LAFAYETTE, IND.
Purdue Road School. (Purdue University.) Address: Ben H. Petty, Engineering Extension Dept., Purdue Univ., Lafayette, Ind.

JANUARY 25-26.—NEW YORK CITY. (Tentative.)
American Institute of Planners. Exec. Sec., Harold W. Lautner, Hunt Hall, Cambridge, Massachusetts

JANUARY 26-28.—WASHINGTON, D. C.
National Public Housing Conference. Sec., Helen Alfred, 112 E. 22d St., New York.

JANUARY 29, WEEK OF.—CHICAGO, ILL.
American Road Builders' Association. (International Amphitheater.) Engr.-Dir., Charles M. Upham, 952 Nat'l Press Bldg., Washington, D. C.

JANUARY 29-31.—WASHINGTON, D. C.
American Society of Landscape Architects. (Mayflower Hotel.) Corresponding sec., Bradford Williams, 9 Park St., Boston, Mass.

JANUARY 30-31.—CHICAGO, ILL.
Association of Asphalt Paving Technologists. (Stevens Hotel.) Sec.-Treas., W. J. Emmons, Univ. of Michigan, Ann Arbor, Mich.

JANUARY 30-31.—CHICAGO, ILL.
National Paving Brick Association. (Congress Hotel.) Nat'l Paving Brick Assn., 1245 Nat'l Press Bldg., Washington, D. C.

FEBRUARY 5-8.—MEMPHIS, TENN.
Associated General Contractors of America, Inc. (Hotel Peabody.) M'ng Dir., E. J. Harding, 222 Munsey Bldg., Washington, D. C.

FEBRUARY 14-16.—ATLANTIC CITY, N. J.
Association of Highway Officials of North Atlantic States. (Hotel Ambassador.) Sec.-Treas., A. Lee Grover, State Highway Dept., Trenton, N. J.

FEBRUARY 14-16.—ANN ARBOR, MICH.
Conference on Highway Engineering. (Michigan Union.) Sec., R. E. Morrison, Univ. of Michigan, Ann Arbor, Mich.

FEBRUARY 19-23.—COLLEGE STATION, TEXAS. (Tentative.)
Texas Water Works Short School. (Texas A. & M. College.) Sec., V. M. Ehlers, Austin, Texas.

FEBRUARY 20-23.—WICHITA, KANS.
Southwest Road Show and School. (Municipal Bldg.) Mgr., F. G. Wieland, 225 S. Water St., Wichita, Kans.

FEBRUARY 24-29.—ST. LOUIS, MO.
American Association of School Administrators. (Municipal Auditorium.) Sec., S. D. Shankland, 1201 16th St., N. W., Washington, D. C.

FEBRUARY 27-29.—CHICAGO, ILL.
American Concrete Institute. (Palmer House.) Sec., Harvey Whipple, 7400 Second Blvd., Detroit, Mich.

MARCH 18-20.—BIRMINGHAM, ALA.
American Water Works Association—Southeastern Section. (Thomas-Jefferson Hotel.) Sec., B. P. Rice, Room 425, State Office Bldg., Columbia, S. C.

MARCH 20-22.—TRENTON, N. J.
New Jersey Sewage Works Association. (Stacy-Trent Hotel.) Sec., John R. Downes, Bound Brook, N. J.

MARCH 27-29.—Place later.
American Water Works Association—Canadian Section. Sec.-Treas., Dr. A. E. Berry, Dept. of Health, Toronto, Ont.

APRIL 4-5.—WEST LAFAYETTE, IND.
American Water Works Association—Indiana Section. (Purdue Univ.) Sec., H. G. Horstman, 603 Traction Terminal Bldg., Indianapolis, Ind.

APRIL 5-6.—Place later.
American Water Works Association—Montana Section. Sec., Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 8-10.—LEXINGTON, KY.
American Water Works Association—Kentucky-Tennessee Section. Sec.-Treas., Howard D. Schmidt, 420 6th Ave., N., Nashville, Tenn.

APRIL 17-19.—EXCELSIOR SPRINGS, MO.
Missouri Association of Public Utilities. (Elms Hotel.) Asst. Sec., Jesse Blythe, 101 W. High St., Jefferson City, Mo.

APRIL 21-25.—KANSAS CITY, MO.
American Water Works Association. (Hotels Phillips, President and Muehlebach.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

APRIL 30-MAY 2.—WASHINGTON, D. C.
Chamber of Commerce of the United States. Sec., Ralph Bradford, 1615 H St., N. W., Washington, D. C.

MAY 9-10.—AKRON, OHIO.
American Water Works Association—Ohio Section. Sec., T. R. Lathrop, State Dept. of Health, Columbus, Ohio.

MAY 9-11.—PORTLAND, ORE.
American Water Works Association—Pacific Northwest Section. (Portland Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 16-18.—Place later.
American Water Works Association—Florida Section. Sec., A. P. Black, Univ. of Florida, Gainesville, Fla.

MAY 21-24.—ST. LOUIS, MO.
Smoke Prevention Association. Sec., Frank A. Chambers, City Hall Square Bldg., Chicago.

MAY 22-24.—CHICAGO, ILL.
American Water Works Association—Illinois Section. (Congress Hotel.) Sec., H. E. Hudson, Jr., 6843 Oglesby Ave., Chicago, Ill.

MAY 23-24.—SEASIDE, ORE.
League of Oregon Cities. (Hotel Seaside.) Sec., Herman Kehrli, Univ. of Oregon, Eugene, Oregon.

JUNE 6-7.—ITHACA, N. Y.
American Water Works Association—New York Section. Spring meeting. (Hotel Ithaca.) Sec., R. K. Blanchard, 50 W. 50th St., New York.

JUNE 24-28.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

The New Thrust Roller Bearing Plate for Trident Meters

An Improvement in Trident Water Meters

The Neptune Meter Co., 50 West 50th Street, New York, has announced that on January 1, 1940, a new thrust roller-bearing plate will become standard in Trident water-meter disc chambers. The purpose of this is to prolong the life of the chamber, to increase its sensitivity, to reduce the cost of repairs, and to eliminate a possible source of sound which, under certain piping conditions, might be amplified to an objectionable degree. In these chambers, the thrust roller runs against this inexpensive, renewable bearing plate, so that the resultant wear will no longer be taken by the chamber itself. This will result in more years of service and a reduction in the cost of obtaining better testing meters from the repair shop.

Of further interest to present users of Trident meters is the fact that the new chambers may be installed in meters already in service and, if it is so desired, old chambers may be returned to the factory to be brought up to date.

Copper Alloys in the Sewage-Works Field

During the past twelve years copper and its alloys have been increasingly specified by engineers for many uses in the sewage-treatment field. Equipment used in these plants is subjected to highly corrosive conditions, which may vary a great deal in different sections of the country. The copper-silicon alloys, which are widely used in sewage-treatment projects today, are being installed as the result of severe tests under actual service conditions. Copper-silicon alloys possess relatively high strength, having a minimum tensile strength in the soft or annealed condition of 50,000 pounds per square inch up to 100,000 pounds per square inch in cold worked forms. They are highly resistant to fatigue and are easily fabricated and welded. The corrosion resistance of these alloys is equal, if not superior, to pure copper.

New York City, in a comprehensive program of sewage treatment, started in 1935 with the Coney Island plant with a capacity of 35 mg daily, and then the Ward's Island plant with a capacity of 190 mgd. In order to serve the New York World's Fair during 1939 and 1940, the Tallman's Island plant, capacity 40 mgd, was rushed to completion. Chicago has completed the largest plant in the world, the Southwest Treatment Works, with a daily capacity of 400 mg.

These large sewage-treatment plants employ many tons of copper and its alloys for a long list of diversified applications. For example, in the Southwest Works in Chicago over 100,000 pounds of copper-silicon electrical conduit was installed because of its physical properties and high resistance to corrosion. Many additional tons were installed in the form of screens, filters, weirs, gates and other mechanical and electrical equipment. The Ward's Island and Tallman's Island plants in New York City also contain many tons of these materials for various applications.

Full information regarding the service of copper and copper alloys in the sewage and water-works fields may be secured from the Copper and Brass Research Association, 420 Lexington Avenue, New York.

George Schlesinger Dies in Washington

George F. Schlesinger, Chief Engineer and Secretary, National Paving Brick Association, Washington, D. C., died suddenly in Washington on December 1. Born in Xenia, Ohio, in 1884, he graduated from Ohio State University in civil engineering in 1907, and then practiced civil engineering, principally railroad work, until 1915. Between 1919 and 1925 he was Division Engineer and later Chief Engineer of the Ohio Department of Highways. Then, from 1925 to 1928, he was Director, Department of Highways and Public Works. Since September, 1938, he had been Treasurer of the American Road Builders' Association.

New Officers Elected by American-LaFrance

American - LaFrance - Foamite Corporation, Elmira, N. Y., has elected Edward E. O'Neill President, and William M. Cooper to the Board of Directors and Vice-President and Comptroller of the corporation. Mr. O'Neill has been Vice-President and Director of the company since 1936 and has been associated, either directly or indirectly, with the business for the past 24 years.

William M. Cooper is a native Elmiran and for 29 years was with the American Sales Book Co. in various capacities. At the time their general offices were moved to Niagara Falls, in 1934, he was Director of Market Research. For the past four years he has made his home in New York City, where he was connected with Stevenson, Jordan & Harrison, management engineers.

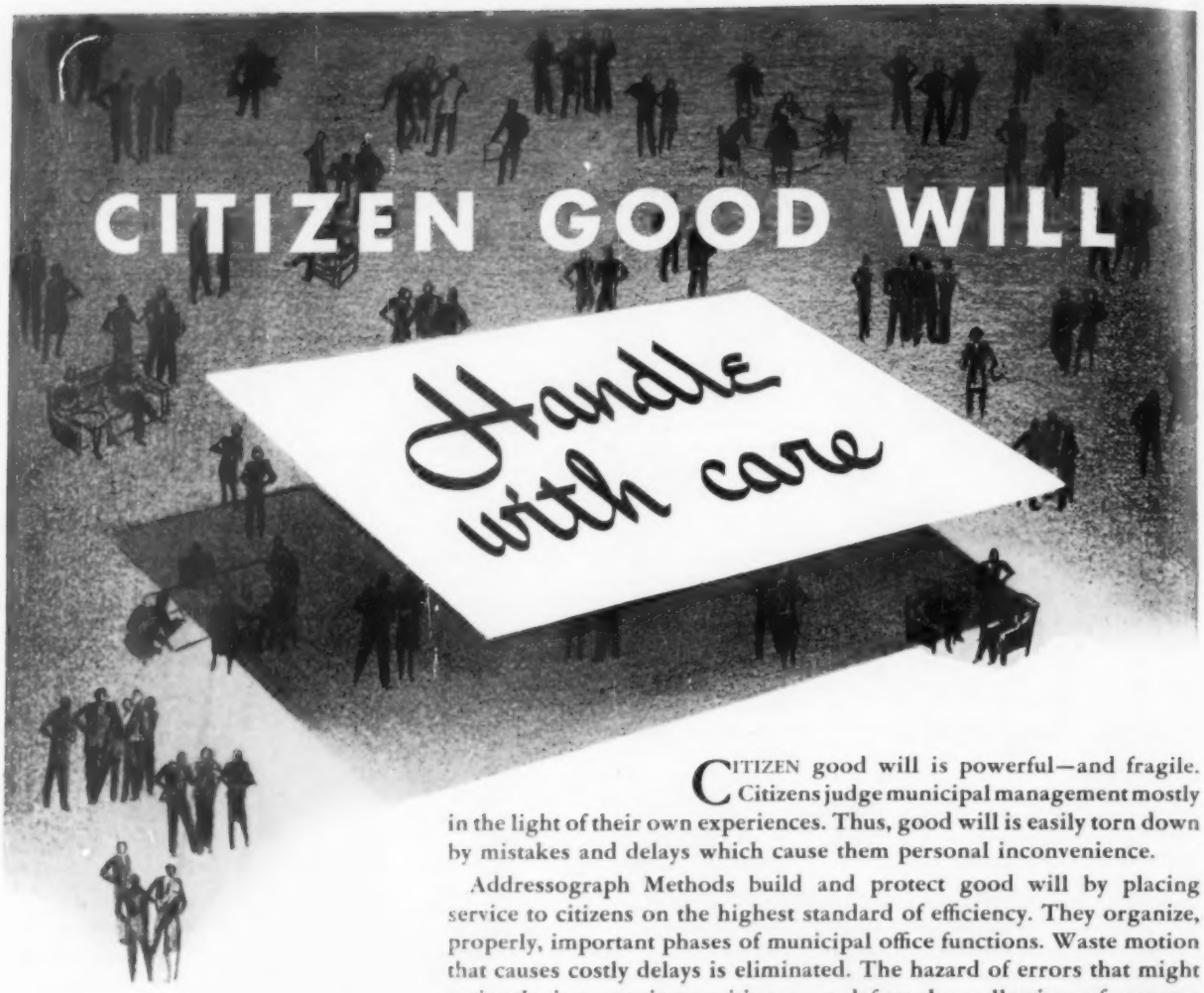
New Mechanical Puller for Small Diameter Pipe

A new device specifically designed for pipe pulling to permit service pipe renewals without the cost of trench-digging has been announced by Templeton, Kenly & Co., 1020 South Central Avenue, Chicago, Ill. This Simplex No. 5950 service pipe puller has two jacking mechanisms; one a ratchet-operated screw jack with high "break-away" power to loosen the pipe, and a lever jack with pawl and rack which pulls the pipe. The pipe is gripped firmly with an easily installed wedge clamp which holds without crimping or bending the pipe.

One unit handles 1-inch, 1¼-inch or 1½-inch pipe, depending on the size of wedge clamp used. Both jacking actions are performed vertically so as to minimize the width of the trench needed. The only trench required for this machine is the length of one section of pipe, thus eliminating considerable damage to streets, walks and lawns.

A new bulletin, U-40, describes the operation and applications of this new pipe puller and copies will be sent free.

The New Simplex Pipe Puller for Replacing Service Pipes



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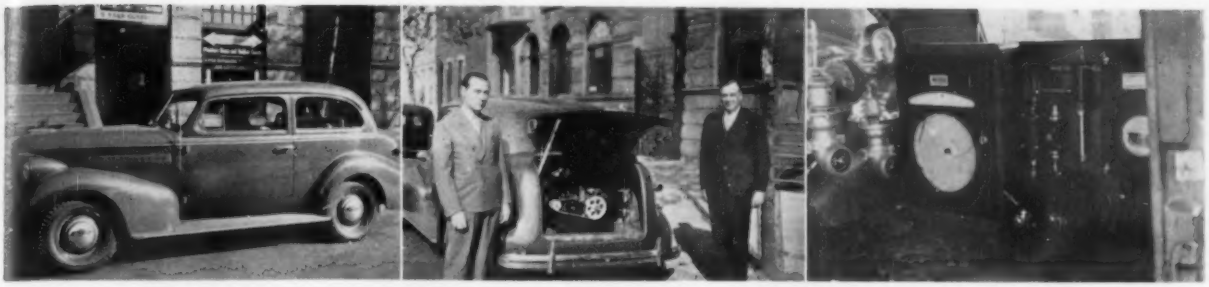


Left—The New "Blue Car" That Carries the "Little Red Pump" and Builders Iron Foundry Products to Visit Water and Sewage-Works Officials. Center—Winfield S. Codell and Alan A. Wood Show the Proportioneers Pump in the Trunk. At Right We Take a Look Inside the Car

The Treatment Trailer Has "Blue Car" Aid

The long trek of Proportioneers' Treatment Trailer to various parts of the United States, Canada and Mexico is water-works history. That laboratory on wheels now has an offspring, according to Jeff Corydon, President, Proportioneers, Inc., 9 Codding Street, Providence, R. I. A "Blue Car" has been evolved under the guidance of Alan A. Wood of Philadelphia, who is in charge of sales for Proportioneers, Inc., and Builders Iron Foundry, Providence, R. I., in Pennsylvania, Virginia, Maryland and New Jersey.

The Blue Car contains operating exhibits of chemical feeding machines, registering, indicating, and recording apparatus of the venturi type, shunt meters and other equipment for which Proportioneers, Inc., and Builders Iron Foundry are known. Mr. Wood's Blue Car is far more mobile and speedier than the Treatment Trailer, and carries a very compact exhibit of chlorinators, ammoniators and miscellaneous chemical feeders for rendering immediate protection of water supply or sewage effluents when sudden emergencies arise.

Traffic Signal Award by New York City

The Ruleta Co. Inc., associate of the Marbelite Co., 22 Warren Street, New York, has been awarded a $37,000 contract for furnishing traffic signal equipment to New York City as follows: 250 four-way, eight-light traffic signals; 423 four-way, eight-light traffic signals with visors; 196 one-way, two-light traffic signals; 500 adjustable louvre visors; 500 adjustable angle adapters; and 500 blank lens shields.

January Meeting of National Paving Brick Association

The National Paving Brick Association has announced that its 34th annual meeting will be held in Chicago, Ill., January 30 and 31, 1940, at the Congress Hotel, with the sessions on the second day open to the general public. It will be noted that this meeting is scheduled during the week of the 1940 Road Show-Convention of the American Road Builders' Association, January 29-February 2.

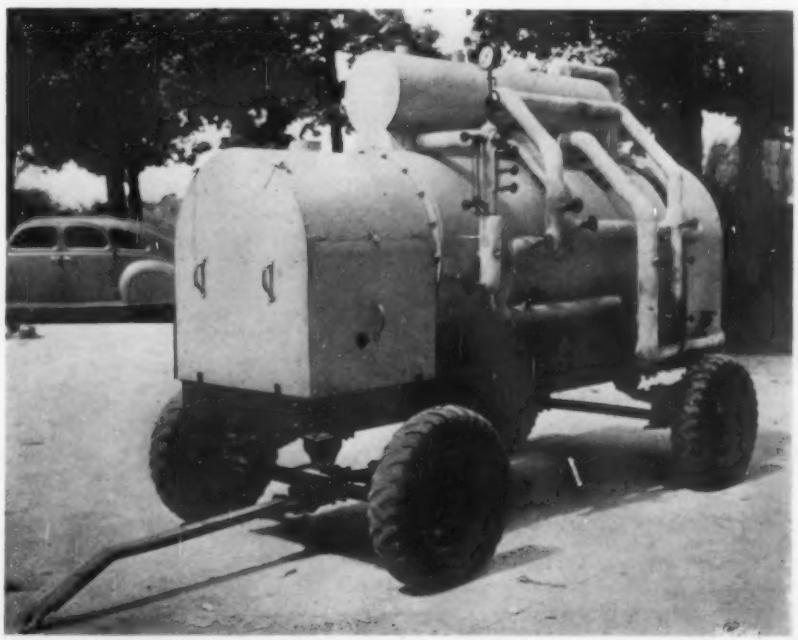
The papers to be presented will include recent developments in manufacturing, in the technique of testing and in construction practices, particularly based on the experience with the additional mileage of vibrated monolithic brick pavement which has been completed during the past year. C. C. Blair, Metropolitan Paving Brick Co., Canton, Ohio, is President of the National Paving Brick Association, Washington, D. C.

Portable Boiler Thaws Frozen Culverts Quickly

Many cities in the snow belt have had the very unpleasant task of thawing out culverts and manholes in winter. Since the season when this may be necessary is rapidly approaching, our readers will be interested in an unusual installation made by the city of Milwaukee. Every winter the temperature in Milwaukee frequently goes well below zero, freezing up culverts and manholes, which must be thawed out promptly. The most satisfactory way of doing this work is with steam.

In the past it has been somewhat difficult to get steam to the culverts. The city has used some of its old fire engines, which were hard to move and slow to steam up. In some cases it took hours to get up sufficient steam and required the services of two or three operators. The problem was solved by means of a Cleaver-Brooks portable steam boiler burner, mounted on a 4-wheel trailer, equipped with Timken roller bearings. The burner uses No. 3 fuel oil, and develops 40 to 50 horsepower. The boiler, which is built to meet code requirements at 125-pound pressure, is well insulated and lagged with steel for protection against the weather. This unit is capable of generating 100 pounds pressure in 30 minutes from a cold start, and is equipped with all the required accessories, such as a hose reel, rack, steam hose and other equipment. Air for combustion is provided by a blower driven by a Briggs & Stratton gasoline engine. The boiler and burner unit was furnished by Cleaver-Brooks Co., 3112 West Center Street, Milwaukee, Wis.

Don't Miss the Road Show
A.R.B.A. Convention and Exhibits
Chicago, Jan. 29-Feb. 2, 1940



The Cleaver-Brooks Boiler Used by the City of Milwaukee for Thawing Manholes

Burroughs

SPEED

is easy and natural on the

SHORT-CUT KEYBOARD

It's easy to add fast and accurately on a Burroughs because the Short-Cut Keyboard eliminates all needless operations.

Let the Burroughs representative show you how much time and effort the Short-Cut method can save you on *your* work. Call the local Burroughs office today.

BURROUGHS ADDING MACHINE COMPANY
DETROIT, MICHIGAN

ALL CIPHERS ARE AUTOMATIC

● Only on the Short-Cut Keyboard are ciphers written automatically. Thus, much of the work is done without touching a key.

SEVERAL KEYS CAN BE DEPRESSED AT ONE TIME

● Only on the Short-Cut Keyboard can two or more keys be depressed at one time. This saves many needless operations.

ENTIRE AMOUNTS CAN BE WRITTEN IN ONE OPERATION

● Only on the Short-Cut Keyboard can an entire amount and the motor bar be depressed together, thus listing and adding amount in one operation.

The Enclosed Cab Model of the Austin-Western Patrol Sweeper

Enclosed Cab Available for Patrol Sweepers

The Patrol Sweeper, made by The Austin-Western Road Machinery Co., Aurora, Ill., is now being built equipped with a streamlined, enclosed cab, developed for the operator's comfort and protection during night operation and cold weather. It is claimed that the visibility from within the cab is better than that from within an ordinary automobile. The cab is roomy and comfortable, two doors making it possible for the operator to enter from either side, and the upper windows in the doors can be raised or lowered at will.

Austin-Western reports that although shipments of the Patrol Sweeper did not start until July, 1938, there are now about 110 cities using one or more of these sweepers.

Waukesha Cuts Costs of Stoking Boilers

Waukesha, Wis., has recently cut its fuel budget for the steam boilers in its North Street water-works pumping station by installing an Iron Fireman automatic coal stoker. The North Street pumping station provides steam for the warehouse office and garage, in addition to the pumping station.

A. P. Kuranz, Superintendent of Water Works of Waukesha, reports that four hand-fired furnaces and boilers were used before the stoker was installed. These have been replaced by one stoker and one boiler with a considerable saving in cost. Coal consumption with hand-firing was approximately 54 tons, costing about $596, and heating was poor, with uneven temperatures. With stoker firing, Mr. Kuranz reports, the consumption of coal has been cut to 39 tons, costing $282, a saving of $314, or 52 per cent.

Further, by adopting automatic firing, the Waukesha Water Department has been able to burn less expensive sizes of coal fuel costing less than $8 a ton, whereas hand-firing was done with coal costing $11 per ton. Further information regarding the economy of this method of stoking steam and hot water boilers may be secured from Iron Fireman Manufacturing Co., 3170 West 106th Street, Cleveland, Ohio.

Progress in Cast Iron Pipe Service to Cities

The October, 1939, issue of *Pipe Progress*, the interesting and instructive house organ of the American Cast Iron Pipe Co., Birmingham, Ala., is devoted to a panorama of improvements in cast iron pipe, made possible by the continuous studies and research of Acipco engineers. First are listed eleven developments in pipe manufacture, joints and linings of great importance to users of cast iron pipe in water mains. This list is followed by pages of illustrations and detailed discussions of Mono-Cast Enameline pipe; Mono-Cast Roll-on-Rubber-Ring Joint pipe; Mono-Cast Boltless-Simplex pipe; large-diameter Mono-Cast centrifugal pipe; Molox Ball-and-Socket pipe; Armored Mono-Cast pipe; Acipco tapping sleeves; Doublex-Simplex split sleeves; and Acipco cast iron bolts, which have a breaking strength greater than commercial steel bolts, making possible a 100 per cent true cast iron joint in mechanical-joint pipe.

Copies of this issue of *Pipe Progress* or detailed literature on any one of the features described will be sent promptly, free of charge, upon request to the Publicity Department, American Cast Iron Pipe Co., Box 2603, Birmingham, Ala.

Northrop and Company to Sell Marlow Pumps

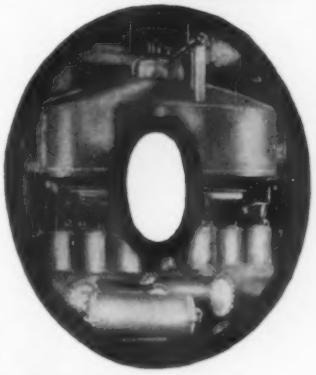
The appointment of Northrop & Co. Inc., 50 Church Street, New York, as exclusive distributors for Marlow pumps to water departments and water companies throughout the country, has been announced by Marlow Pumps, Ridgewood, N. J. Marlow manufactures a complete line of self-priming centrifugal, diaphragm and sludge pumps and portable centrifugal pumps, in sizes from 1½- to 10-inch, equipped with Four Cycle Engines.

Armco Culvert Assn. Announces Drainage Products

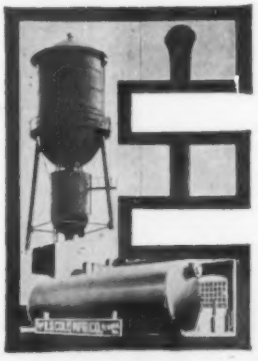
The Armco Culvert Manufacturers Association, Middletown, Ohio, organized in 1904, two years before the introduction of Armco "pure iron" by The American Rolling Mill Co., has recently changed its name to Armco Drainage Products Association, because of the changing trends in its business. This Association has done much to raise the position of the corrugated iron pipe from that of "wrinkled tin" to that of a highly respected modern drainage tool used under severe service conditions.

The officers of the Association are: W. H. O'Neall, President; H. W. Force, Vice-President; and M. F. Shelt, Secretary-Treasurer. The headquarters staff at Middletown is in charge of S. R. Ives, Vice-President and General Manager, with M. C. Patton, Assistant Manager; G. E. Shafer, Chief Engineer; and W. H. Spindler, Publicity Manager.

Tank Builders For Over 80 Years!



Tanks, Towers, Kettles, Kilns, Vats, Vessels, Bins, Boilers, Stacks, Standpipes and other fabricated platework from your specifications or ours.



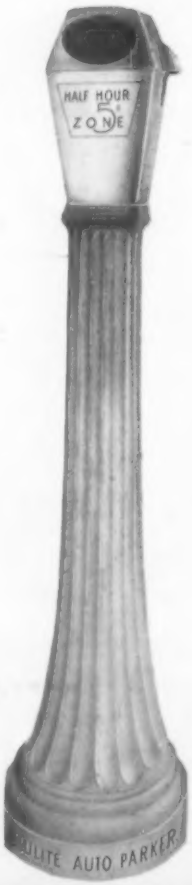
Write for "Tank Talk"—6-A, or let us figure on your requirements.

R.D.COLE MFG.CO.
Established in 1854
NEWNAN···GEORGIA

Announcing

• The ELECTRIC PARKING METER

BLULITE *auto parker*



DROP COIN — light appears and glows during the parking period; then — light goes out at end of parking period . . .

A Car Parked At An Unlighted Meter Is Illegally Parked

- *No springs, ratchets, pendulums — dependable as an electric clock*
- *No winding — no flag — no colored dials*
- *No rust — no freezing*
- *Makes night parking regulations easy to enforce*
- *Fully tested and guaranteed*
- *Connected to regular electric current supply*
- *Operating cost: 2 mills per 8-hour day or 61 cents for a 305-day year*
- *Mounted on heavy cast iron standard which contains coin box*

The ELECTRIC PARKING METER

is a municipal device in the class with fire-alarm boxes, traffic lights, lamp standards and hydrants

ELECTRIC AUTO PARKER CORPORATION

250 WEST 57th STREET NEW YORK CITY

C. S. Patton

New Sales Manager for Alco Division

American Locomotive Co., New York City, has announced the appointment of C. S. Patton as Sales Manager of the Alco Products Division, in charge of the sale of heat exchangers, condensers, feed water heaters, evaporators, tubular equipment, code pressure vessels, fabricated plate work, water pipe and allied lines.

Mr. Patton graduated from Cornell in 1918, and for the following eight years was connected with the ship-building industry. In 1926 he became New York Manager for the Biggs Boiler Works, of Akron, Ohio; in 1929 he took charge of sales of fabricated plate work for the Heat Transfer Products Co., until that organization was acquired by the American Locomotive Co. and later expanded into Alco Products Inc. Later he was made Manager of Equipment Sales, Alco Products Division of American Locomotive Co., a position which he has held until his present appointment.

Soil-Cement Methods for Streets and Roads

A very thoroughgoing Construction Handbook has been published by the Portland Cement Association, 33 West Grand Avenue, Chicago, Ill., on Soil-Cement Roads, giving the laboratory and testing procedures necessary to insure successful work, field control methods by resident and soils engineers, and a very careful delineation of each step in the construction of soil-cement roads. This 88-page manual should be in the hands of every state, county and municipal engineer and resident or construction engineer responsible for the construction of light traffic roads, since it can be used for both study and reference. Our readers may secure copies of the handbook without cost by mentioning this item.

Testing Set Ready for Sodium Vapor Lamps

To make it easier to determine if apparently "burned out" sodium vapor lamps, used in safety lighting on streets, highways and bridges, are actually inoperative, General Electric Company, Schenectady, N. Y., has announced a new testing set. Occasionally a sodium vapor lamp will not operate because of a faulty relay or socket, while the lamp itself is actually in good condition. Since it is more difficult to check the sockets and relays, the new testing set permits operators to ascertain easily if the lamp is burned out.

The lamp is merely plugged in the set, which operates from 110 volts, 60 cycles, and the normal service circuit turned on. If the lamp operates after the proper cathode preheating period, it is an indication that the fault lies in the socket or relay.

The testing set consists of a transformer and operating panel, mounted in a housing designed for easy handling. The panel contains the voltmeter terminals, a lamp socket, transformer adjusting taps, a line switch, and a cathode preheating switch.

Whiting, Ind., to Install Ozone Water Treatment

The Whiting, Ind., Board of Public Works and the City Council have awarded a contract to Ozone Processes, Inc., Philadelphia, Pa., to supply and install the necessary equipment to treat the water supply of the city of Whiting, averaging 3 mgd. with ozone. The ozone equipment will have a daily capacity of 45 pounds of ozone, providing for ample reserves to meet the ozone demand of the Whiting water, as determined through pilot plant tests. The installation work is to proceed immediately, and it is expected that the ozonation plant will be in full operation early in 1940.

CATHODIC PROTECTION

The only positive method of preventing rusting, pitting and corrosion in steel water containers

THE PATENTED

RUSTA-RESTOR TRADE MARK REGISTERED

Patented and Patents Pending

METHOD

STEEL WATER TANKS

FILTER BEDS

For complete details write

RUSTA RESTOR CORPORATION

1450 W. State St., Fremont, O.

Why you need a SMITH AIR COMPRESSOR

PORTABILITY

Think of the many advantages of such a light weight, portable compressor! Move it easily from one job to another. Tow it at permissible truck speeds.

DEPENDABILITY

A stand-out in performance! It's ruggedness and efficiency are sources of constant satisfaction to owners everywhere.

ECONOMY

Uses only one gallon of gasoline an hour! Repair parts are available at Ford dealers everywhere.

And, best of all, a Smith Compressor is priced at LESS THAN HALF THE COST of a standard compressor of equal capacity! 60 cu. ft. a minute capacity—all the power you'll need to operate rock drills and paving breakers. Pressure up to 175 lbs. a square inch. Head equipped with high speed compressor valves; automatic unloading and idling.

With a Ford Motor and shop facilities you can assemble your own compressor. We will furnish a Smith Compressor Head and Accessories with instructions for mounting.

Write Today!

GORDON SMITH & CO.

425 College St., Bowling Green, Ky.

CALCIUM CHLORIDE THE *Only* ANSWER TO ALL THESE FUNDAMENTAL ICE CONTROL PROBLEMS

Only **CALCIUM CHLORIDE** among readily available chemicals, will keep exposed stock piles unfrozen through zero weather ready to load and easy to spread.

Only **CALCIUM CHLORIDE** will anchor abrasives quickly enough to prevent quantities from being blown, thrown or pushed away before they get their grip on ice.

Only **CALCIUM CHLORIDE** will anchor abrasives in coldest weather and melt ice at below zero temperatures.

CALCIUM CHLORIDE INCREASES FRICTION

50 lbs. of calcium chloride per cubic yard increased friction of abrasives by 56%.

Cars traveling 20 miles per hour were stopped in 81 feet on pavements covered with ½ pound of treated abrasives per square yard, yet they required 83 feet to be stopped on pavements covered with three times as much untreated material, and 161 feet to stop on plain ice.

When treated with calcium chloride, ½ pound of abrasives per square yard of pavement was as effective as three times as much of the untreated abrasive.

New and interesting research projects conducted by many organizations, including Iowa Engineering Experiment Station and the University of Michigan, shed new light on the ice control problem. These experiments show the way to increased effectiveness and greatly reduced costs. Reports mailed on request. Write today for ice control booklet and reports.

CALCIUM CHLORIDE ASSOCIATION • 4145 PENOBSCOT BLDG. • DETROIT, MICHIGAN

The First Shipment of an Order for 33 Miles of 14- to 48-Inch Mono-Cast Enameline Pipe Ready to Leave the Birmingham, Ala., Plant of the American Cast Iron Pipe Co.

Shipment Begins on Large C. I. Pipe Order

During the week of October 23 the first shipment on the largest order for cast iron pipe to be sent out from Birmingham, Ala., for many years started on its way to Wichita, Kans. Twenty-four cars of 36-inch and 48-inch Mono-Cast Enameline Pipe were included in the first shipment from the American Cast Iron Pipe Co.'s plant at Birmingham. The Wichita order calls for approximately 33 miles of this pipe in sizes from 14- to 48-inch inclusive, all to be furnished by the American Cast Iron Pipe Co. This shipment is also another "first" in that it is the initial shipment of 48-inch cast iron pipe manufactured by the centrifugal method of casting pipe in sand-lined refractory molds.

Reflectors to Outline Highway Danger Spots

Indirect lighting is rapidly becoming an appreciable safety factor on our highways. Many state and county highway departments are using reflectors of various types to give essential road information after dark. Under the automobile headlights the reflectors outline the alignment and driving limits of the road. With these reflectors spaced 100 feet apart, and closer on curves, at distances beyond the range of direct headlight illumination, the line of light ahead appears reasonably continuous. Curves, turns, hills, grades and other hazards are disclosed far enough ahead to permit proper timing of compensating actions by the driver.

Installation of such reflectors reduces the problem of fog pockets, and under severe conditions of rain, sleet, snow and general fog the course of the highway ahead is usually indicated clearly enough so that drivers may proceed with safety. Stimson reflectors, made of Lucite, consist of multiple pyramidal reflecting elements and reflect the light from a headlight beam at very wide angles, so that they may be faced tangentially in both directions on the inside or outside of sharp curves and still give an effective indication to traffic approaching from either direction. The smooth, slightly curved face surfaces of Stimsonite reflectors shed dirt, rain, snow and ice, and they are easily cleaned of any sticky traffic film that may gradually accumulate. The reflectors are made in self-locking heads of cold rolled steel, Parkerized after fabrication, and finished with three coats of baked synthetic resin, yellow enamel with black trim. The halves of the housing are held securely together by two stainless steel channel strips tightly crimped in place. They are also made with stainless steel reflector heads, and in other assemblies that are described and illustrated in Bulletin No. GA-7, which may be secured from Signal Service Corporation, Elizabeth, N. J., by mentioning this item.

You can't get rid of
SLIMY SAM SEWER SLUDGE
with a shovel—

You gotta have an OK Champion Sewer Cleaner to clean out your sewer mains.

The hand models will get him positively, but the power machines will do it faster. You don't want to send men down to spend all day in the sewer when it isn't necessary. You can't endanger the health of your citizens by dirty sewers when the remedy is so easy. Your expensive sewage disposal plant can't do its best work when sewers are dirty and costly damage to the plant happens regularly with dirty sewers.

Many years of rains washing down street dirt, cinders, bricks, etc., eventually fill up any sewer. Finally comes the day of flooded basements, damage suits and hurry-up, unsatisfactory, emergency, temporary cleaning.

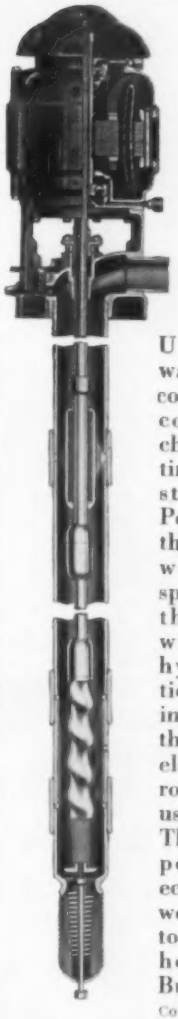
New York City, Atlantic City, Flint, Little Rock, Bay City, Duluth, Westfield, Jersey City, Akron, Midland, Gary and hundreds of other cities keep their sewers at full efficiency by routine machine cleaning with OK Champion equipment. The cost is very low.

Why not get your copy of OK Champion literature, now ready for you?

CHAMPION CORPORATION
4716 Sheffield Ave., Hammond, Ind.

PEERLESS HI-LIFT

--biggest pump improvement in 35 years



No priming
No pre-lubrication
No turbulence
No sand-cutting

•

New principle insures more economy

Utilizing a single water-lifting member consisting of a helical-contoured, hard chrome rotor, rotating within a resilient stator bearing, the Peerless HI-LIFT is the simplest of deep well pumps. The spiraled rotor rolls in the stator bearing with a continuous hypocycloidal motion, literally squeezing the water upward through the pumping element. The shaft rotates at one-half the usual pump speed. This ingenious design permits amazing economy. For 4 in. wells or larger. 300 to 5000 gallons per hour. Write for Bulletin.

Covered by R. Moineau Patents #2028407 & #1892217.

PEERLESS TURBINE and PROPELLER PUMPS for larger capacities

Peerless produces the most complete line of deep well pumps—oil or water lubricated. Turbine Pumps for capacities to 15,000 gallons per minute; Propeller Pumps for capacities up to 100,000 gallons per minute.

PEERLESS PUMP DIVISION
Food Machinery Corp.

Factories:
Los Angeles, San Jose, Fresno, Calif.
Massillon, Ohio

"TERRIBLE TERRY" the Truck Driver

TERRY TRIES BEFORE HE BUYS

HOW'S CHANCES OF TRYING OUT THIS SUIT FOR A COUPLA DAYS? MAYBE I'D BUY IT!
ARE YOU CRAZY?
LOOK PROSPEROUS WITH A "CHECK" SUIT
I WANNA SAMPLE SOME OF YOUR JAVA BEFORE I BUY A CUP
GO AWAY!
YA CAN'T DUNK OUR SINKERS IN YOUR COFFEE
CAN I TRY OUT A FORD TRUCK BEFORE I BUY IT?
YOU BET, BUDDY. AN ON-THE-JOB TEST, WITH YOUR OWN LOADS, WILL PROVE IT'S THE TRUCK FOR YOU!

MAKE AN "ON-THE-JOB" TEST TODAY!

Ask any Ford dealer how you can arrange for a free demonstration — an actual "on-the-job" test designed to give you the *facts* on Ford performance and economy before you buy!

Before You Buy Any Truck or Commercial Car—

See the Ford Line for 1940!

3 Engine Sizes — 95, 85, 60 hp ★ 6 Wheelbases ★ 42 Body and Chassis Types New Modern Styling ★ New Simplified Chassis Design ★ New Longitudinal Front Springs ★ Increased Engine Accessibility ★ Stronger Cab Construction ★ Increased Driver Comfort ★ New Sealed-Beam Headlamps ★ New Instrument Panels — *and a host of other new and time-proved features that make Ford Trucks and Commercial Cars for 1940 more than ever the outstanding units for the money!*

FORD TRUCKS AND COMMERCIAL CARS

Ford Motor Company, builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons, Transit Buses.

Catalogs Filled with Information

Either write direct to the manufacturers for their literature, or, if you prefer, put a circle around the identifying numbers below to indicate the catalogs you want, mail this coupon to The American City Magazine, 470 Fourth Ave., New York, and we will see that the catalogs are sent to you. 12-9

735 736 737 738 739 740 741 742 743 744
745 746 747 748 749 750 751 752 753
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764 765 766 767 768 769 770 771 772
773 774 775 776 777 778 779

Name ..... Position .....

Address .....

Condensed Catalog of Sanitary Equipment

735. A condensed catalog of equipment for municipal water-conditioning and sewage-treatment plants has been issued by International Filter Co., 325 W. 25th Pl., Chicago, Ill. Copies of this Bulletin 60, which has only 4 pages, may be secured free on request. It contains short descriptions of softening, filtering, chemical feeding and proportioning, hydraulic measurement and control equipment for water conditioning, and equipment for the chemical, biological and mechanical treatment of sewage.

Pulled Graders for Dirt Streets

736. By hitching a pulled grader behind a motor grader, many municipalities have found a low-cost way of doing road maintenance jobs in half-time. These same graders can be pulled by trucks or small tractors effectively. Form 5699 issued by Caterpillar Tractor Co., Peoria, Ill., shows the economy of doubling up for road maintenance on dirt streets in cities.

Snow-Plows and Wings

737. Catalog SNP-5-5-39 issued by American Hoist & Derrick Co., St. Paul, Minn., describes the complete line of heavy-duty snow-plows for highway plowing with V and with single curved mouldboards. Copies of this catalog may be secured free on request.

Where Crowds Must Be Seated Safely

738. A very complete and informative bulletin covering its all-steel grandstands has just been published by Pittsburgh-Des Moines Steel Co., in which a large variety of installations are illustrated, and tables of seating capacity, with methods of calculating seating capacity, are included. Copies of this new publication are available on request to the Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa., or through The American City.

Motor Grader Value in Winter

739. When most of a city's motor equipment is holed-in for the winter, its Austin-Western 99 will still be in the running, clearing snow, making and breaking records as it has on maintenance and construction the rest of the year. In the spring there are days and months of solid work ahead, back sloping, pulling ditches, scarifying, discing, mixing, rolling, all of which can be done with one A-W 99. Learn what this one-machine road builder can mean to you in reduced machinery investment and lowered operating costs, by writing for complete information to The Austin-Western Road Machinery Co., Aurora, Ill.

Sustained Accuracy in Water Meters

740. Badger Meter Mfg. Co., Milwaukee, Wis., is particularly proud of the unvarying accuracy of Badger disc meters and offers to show readers of The American City how such accuracy can secure their full revenue from their water lines. A bulletin is provided which gives the complete facts on Badger precision construction, close tolerance fits and highly sensitive disc action.

Rules for Signal Circuits and Cables

741. The Rules and Practices of the New England Section of the International Municipal Signal Association, covering the installation of municipal signal circuits and signal supply circuits and equipment on jointly used poles, for the installation of signal cables and signal supply cables and equipment in underground conduit systems, and for the installation of buried facilities in a jointly used trench, as well as the rules and practices for requested construction of maintenance work performed by the power supply and communications companies for municipalities, have been reprinted by Hazard Insulated Wire Works, Division of the Okonite Co., Wilkes-Barre, Pa., and may be secured free on request by municipal electricians and other municipal officials interested in the problems of installation and maintenance of signal cables and circuits.

Highway Ice Control

742. "Methods, Material and Equipment for the Control of Ice on Highways and Streets," presenting a résumé of existing ice-control practices with particular reference to the use of calcium chloride, has been issued by Solvay Sales Corp., 40 Rector St., New York. This 28-page booklet with illustrations, diagrams, and helpful discussions, may be secured free on request by readers of The American City.

Reinforced Concrete Pipe

743. Characteristic of Lock Joint pipe lines are their tuberculation-proof walls of smooth, dense concrete with a high capacity that will provide for the future's increasing flow requirements. Investigate the low first cost, maintenance cost and long life of Lock Joint's pressure, culvert, sewer and subaqueous pipe lines by writing to Lock Joint Pipe Co., Ampere, N. J., for full details.

Highway Bridges of Creosoted Timber

744. The Wood Preserving Corp., a Koppers subsidiary, Koppers Bldg., Pittsburgh, Pa., has issued an 8½ x 11-inch bulletin containing plans of 21 pressure-treated timber bridges, giving comparative costs, savings, service life, maintenance records and engineering details. Copies may be secured free on request.

Traffic-Signal Controller

745. The General Electric Novalux Type D traffic-signal controller is described and illustrated in considerable detail in a new 16-page bulletin, No. 3270, which may be secured free on request by municipal officials interested in improved traffic signal control, direct from General Electric Co., Schenectady N. Y.

Keep Gasoline and Oil Out of Sewers

746. A new 15-page compact illustrated catalog on the Solus oil and gasoline separator which prevents these liquids from entering drains and sewers and thus prevents explosions in the sewerage system as well as the pollution of waters, at the outfall, has been issued by The Central Foundry Co., 386 Fourth Ave., New York, and copies will be sent free on request to readers of The American City writing to C. W. Stackhouse, Advertising Manager, The Central Foundry Co.

Modern Way of Collecting Garbage

747. A well-illustrated folder on the Gar Wood Load-Packer, which is intended to accommodate greater loads when collecting garbage or rubbish, is available from Gar Wood Industries, Inc., 7924 Riopelle St., Detroit, Mich., to those asking for Bulletin No. 27. Details of the Load-Packer's loading and packing are featured and various figures showing the unit with its loading hopper open, sealed, and emptied for ramming the rubbish into the body, and with its tailgate and eventually the entire body raised for dumping.

Fast-Moving Air Compressors

748. Portable and semi-portable air compressors, which can be towed rapidly from job to job, and are particularly adapted for city street work in trenches, and conduits for gas, water and sewers and for street maintenance, are described in detail in the bulletins of Worthington Pump & Machinery Corp., Harrison, N. J.

Efficient Water-Main Tapping Machines

749. The Smith corporation tapping machine, which taps and inserts corporation cocks in water mains, is the simplest, lightest, strongest, most economical and easiest-handled machine for the purpose. It can be carried by one man. Literature describing this machine, and proving the claims made for it, may be secured free on request from The A. P. Smith Mfg. Co., East Orange, N. J.

(Continued on page 18)

Promises are made easily but performance is the only factor which speaks with absolute conviction. Performance depends upon quality and proven engineering. There are on record hundreds of cases where the installation of the first Layne Well and Pump automatically brought repeat orders for additional units, as the need for water increased. In some instances the record is as high as forty units for a municipality. Many industrial plants have ten, twenty, and up to twenty-five Layne Well Water Supply Units, installed over a period of several years.

AFFILIATED COMPANIES

Layne-Arkansas Co., Stuttgart, Ark.
Layne-Atlantic Co., Norfolk, Va.
Layne-Central Co., Memphis, Tenn.
Layne-Northern Co., Mishawaka, Ind.
Layne-Louisiana Co., Lake Charles, La.
Layne-New York Co., New York City, and Pittsburgh, Pa.
Layne-Northwest Co., Milwaukee, Wis.
Layne-Ohio Co., Columbus, Ohio
Layne-Texas Co., Houston and Dallas, Texas
Layne-Western Co., Kansas City, Mo., Chicago, Ill., Omaha, Nebraska
Layne-Western Co. of Minnesota, Minneapolis, Minn.
Layne-Bowler New England Company, Boston, Massachusetts
International Water Supply, Ltd., London, Ontario, Canada

Of all equipment, wells and pumps should be most dependable. Shut-downs for repairs are very expensive. Layne appreciates the value of uninterrupted service and builds its water supply and pumping systems to give maximum trouble-free service. Quality is not sacrificed to reduce prices or meet cheap competition.

If in need of water, investigate the outstanding features of Layne Wells and Pumps. Illustrated bulletins may be obtained by addressing

LAYNE & BOWLER, INC.
Dept. B, Memphis, Tenn.

LAYNE

PUMPS & WELL WATER SYSTEMS

For Municipalities, Industries, Railroads, Mines and Irrigation

MAKE A REFERENCE FILE OF YOUR CATALOG FILE

(*Continued from page 17*)

Rock Salt Removes Street Ice and Snow

750. International Salt Co., Inc., Scranton, Pa., has issued an attractive folder showing how pavements are made really safe in winter through the use of International Retsof and Detroit brands of rock salt. It tells why some northern cities have prosperous business in the winter, while their neighbors suffer from roads and streets made dangerous by hard-packed snow and ice.

Frost-Proofed Water Meters

751. The motto of Buffalo Meter Co., 2902 Main St., Buffalo, N. Y., is "First Quality Meters Exclusively." Both Niagara and American water meters in sizes up to 1 inch are available in the frost bottom type. These meters allow all internal parts to separate and move with the ice upon freezing; therefore they afford complete frost protection. The Buffalo catalog tells the whole story.

Reduce Leakage with Cast Iron Pipe

752. Leakage from water mains is only one of the items that go to make up unaccounted-for water. Experienced water-works men know that while unaccounted-for water will range from 10 to 25% in individual cases, the generally accepted average is 15% of normal consumption. Cast iron mains in sizes from 4 to 30 inches, and up to 44 years old, showed an average of less than 2% of the average of normal consumption per mile of distribution main per day as leakage. For further information write to The Cast Iron Pipe Research Assn., Thomas F. Wolfe, Research Engineer, 1015 Peoples Gas Bldg., Chicago, Ill.

Simplified Tax Accounting

753. Burroughs Adding Machine Co., 6671 Second Ave., Detroit, Mich., will be pleased to furnish complete facts about simplified tax accounting by direct methods and the application of the Burroughs tax accounting machine to this problem. This machine prepares the tax roll, tax bill and tax ledger in one operation, computing the taxes by direct electric multiplication and accumulating page totals. All three records, including the computations, are completed with fewer key depressions than are required to copy one record on an ordinary typewriter.

Added Truck Tire Mileage

754. The new 1940 All-Weather pneumatic tire, built by Goodyear for long mileage, quicker stopping, sure-footed traction, freedom from cracking, resistance to separation, cool running and blow-out protection, should be investigated by municipal departments. Complete information can be secured from the Goodyear Tire & Rubber Co., Akron, Ohio.

Packaged Sterilization for Water

755. Whether the job in hand be water purification, sewage treatment or swimming pool sanitation, the city official in charge expects a dependable supply of liquid chlorine, a pure product, trouble-free containers and valves, and prompt delivery service. This is a service guaranteed by Mathieson Alkali Works Inc., 60 E. 42nd St., New York, which will be pleased to quote on your chlorine needs, as well as supplying HTH, the packaged chlorine in handy form, which has many applications in city departments.

Proper Asphalt for City Paving

756. Socony asphalt road oils, Socony asphalt joint fillers, Socony waterproofing asphalt, Socony cut-back surfacing asphalt, Socony asphalt Binder A for surface treatment, Socony refined asphalt for sheet asphalt paving, Socony cold patch asphalt for all types of patching, Socony asphalt Binders B & C for penetration work, Socony paving asphalt 51-60 and 61-70 penetration for the mixing method, and Socony asphalt emulsions, produced by Socony-Vacuum Oil Co., Inc., Standard Oil of New York Division, 26 Broadway, New York, are all covered in the specifications which will be mailed free on request to city paving officials wishing to improve their city streets economically.

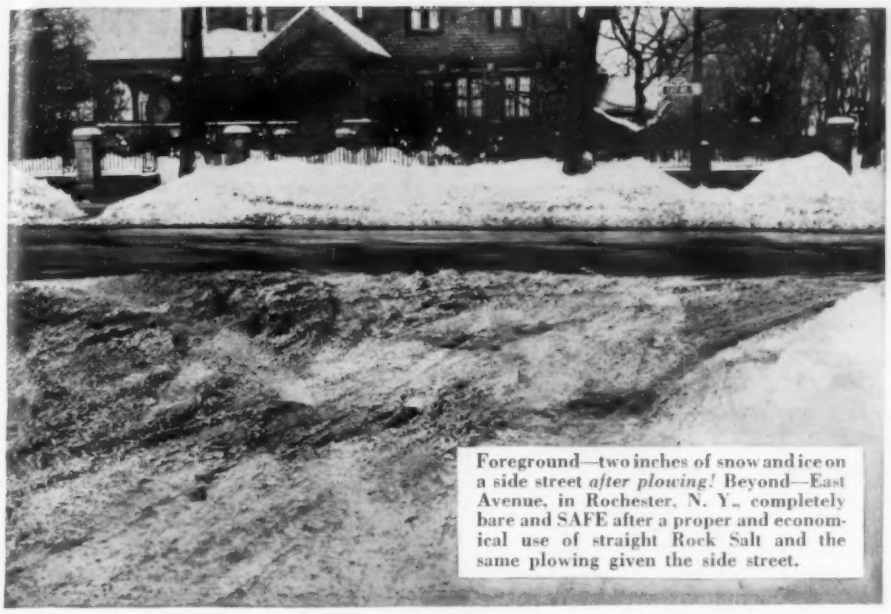
Filter Plants of Steel

757. The Morse Filter Plant, a modern, highly efficient steel unit, individually engineered to fit the specific water filtration requirements of any city, is described in detail in literature which may be secured direct from the Chicago Bridge & Iron Co., 2127 Old Colony Bldg., Chicago, Ill. Some of the advantages of all-steel construction are the elimination of seepage and cracking. This type of plant requires less ground space per unit of capacity than any other type of construction.

Meters with Adjustable Delivery

758. Trident Style-3 1½-inch and 2-inch disc meters are so designed that delivery can be regulated in relation to the line pressure to give the desired control over the rate of flow without interfering with operating efficiency. These meters can therefore be used economically on all systems, including those having widely varying pressures. Complete information regarding the interchangeable parts, the oil-enclosed gear train and other features of Style-3 may be secured free on request from Neptune Meter Co., 50 W. 50th St., New York.

(*Continued on page 20*)



Foreground—two inches of snow and ice on a side street *after plowing!* Beyond—East Avenue, in Rochester, N. Y., completely bare and SAFE after a proper and economical use of straight Rock Salt and the same plowing given the side street.

MAKE WINTER TRAFFIC REALLY SAFE

BY NEW LOW COST METHODS *WITH* INTERNATIONAL'S ROCK SALT

For years, public officials have sought a low cost way to overcome the icy highway conditions about which the public is so increasingly critical. In recent years, the Research and Engineering Departments of International have been working closely with road and street engineers and maintenance men to develop better ways of meeting the public demand for real winter safety. New methods have been worked out in actual, practical every day use which utilize the great melting power of International's Rock Salt (see table below) to make streets and highways *bare* and therefore safe, *at low cost.*

International will place at the disposal of any street or highway official, the results of its long research, broad experience and practical work in winter pavement safety. Retsof and Detroit brands of Rock Salt are equally economical. Merely write for a copy of the new illustrated folder, "Make Winter Pavements Really Safe." It will tell you about practical methods now used in most northern states. Better still, an International engineer will call, with no obligation, and give you all the facts.

WHY INTERNATIONAL'S ROCK SALT IS SO ECONOMICAL WITH THIS METHOD

Because of its great melting power, Rock Salt is most economical for use in treating stock piles of abrasives to keep them from freezing, and in treating abrasives so that they will be imbedded in ice. For the same reason, Rock Salt used alone is the most economical melting agent to *remove* ice and hard-packed snow. A little does much. In addition, this method saves: cost of abrasives, cost of treating, storing, reloading and applying them; the cost of removing them from roads and streets, sewers and catch basins later; and, since proper use of straight Rock Salt corrects all effects of storms with one treatment, saves the cost of treatments several times a day for several days with abrasives. No wonder public officials say:

"It costs less to keep pavements bare."

POUNDS OF ICE MELTED PER POUND OF CHEMICAL
Maintenance Committee, Highway Research Board Vol. 13

Temperature Deg. F.	Sodium Chloride (Salt)	77-80 percent Flake Calcium Chloride
30°	46.3 lbs. of ice	31.1 lbs. of ice
25°	14.4 lbs. of ice	10.4 lbs. of ice
20°	8.6 lbs. of ice	6.8 lbs. of ice
15°	6.3 lbs. of ice	5.5 lbs. of ice
10°	4.9 lbs. of ice	4.8 lbs. of ice
5°	4.1 lbs. of ice	4.4 lbs. of ice
0°	3.7 lbs. of ice	4.0 lbs. of ice
—6.5°	3.2 lbs. of ice	3.7 lbs. of ice

The greater ice melting power of ROCK SALT
Advantage of Rock Salt in percentages as calculated by International Salt Co., Inc.

Rock Salt melts 48.9% more ice
Rock Salt melts 38.4% more ice
Rock Salt melts 26.4% more ice
Rock Salt melts 14.5% more ice
Rock Salt melts 2.0% more ice

— 6.8% Temperatures at these low levels are seldom long sustained, and make it impractical to use any ice melting agent due to the large amount required.
— 7.5%
—13.5%

INTERNATIONAL SALT COMPANY, Inc.
SCRANTON, PA. NEW YORK, N. Y.

When you write for that catalog, kindly mention THE AMERICAN CITY.

"First Quality Meters Exclusively"

Depend upon it—

Any meter you buy from the Buffalo Meter Company has top quality design, materials and construction. We sell no second-line of meters.

This disc compels extra accuracy!

By making Buffalo meter discs thicker than standard, extra resistance is created to prevent water slipping unmeasured through the meter. Reducing slippage compels extra accuracy, makes the meters earn more revenue for you, builds profits for your water system.

The aluminum alloy reinforcing plate in each disc makes it practically indestructible, yet keeps the weight so light that it is not in the least sluggish.

Niagara and American Meters have engineering reasons for their superior performance!

BUFFALO METER COMPANY
2902 Main Street Buffalo, N. Y.

MAKE A REFERENCE FILE OF YOUR CATALOG FILE

(*Continued from page* 18)

Check Up on Your Pumps

759. Many pump owners are slashing their water-lifting costs on deep-well pumps by simplified test reports. This Chart-Chek system is a free service offered by Pomona Pump Co., Pomona, Calif., to water-works officials all over the country. Write today for the Chart-Chek. Complete your end of the report and you will get a written report on your pump, well and water system, showing you how to cut your costs.

Sheet Asphalt Streets for Cities

760. Typical heavy-traffic thoroughfares in many of the leading cities of the United States are surfaced with heavy-duty pavement constructed of Texaco sheet asphalt, which for 30 years has been playing the role of heavy-duty paving all over the United States east of the Rockies. Information regarding its compact, resilient and joint-free surface will be found in the book "Texaco Sheet Asphalt," which may be secured free from the Asphalt Sales Dept., The Texas Co., 135 E. 42nd St., New York.

Cast Iron Pipe Joints Without Calking

761. Leadite for jointing cast iron water mains only has to be melted and poured and does not require the digging of large bell-holes. This saves at least 75% of the cost of making joints in cast iron mains. Leadite is shipped in powdered form, packed in sacks of 100 lbs. and has been tested and used for over 35 years. Water departments wishing quotations on their requirements, should write to The Leadite Co., Girard Trust Co. Bldg., Philadelphia, Pa.

High-Grade Brass Goods and Fittings

762. Farnan Brass Works Co., Cleveland, Ohio, will be pleased to quote any city on the highest grade brass stops, couplings and fittings for water-department requirements. These small, but essential, units of a water-works system must be of the highest grade to prove economical in the long run.

Meter Settings and Meter Boxes

763. Catalog 38 which may be secured free on request from the Ford Meter Box Co., Wabash, Ind., describes the products which this company has been manufacturing for over 40 years, developing and perfecting the equipment year by year. It describes meter housings, meter-holding devices for both pit and basement settings, and meter-testing equipment.

Deep-Well Water Systems

764. Layne deep-well water systems are built to fulfill specific conditions by a widely experienced well-water developing organization. Qualified by experience and reputation, this organization is prepared to do the job complete, from drilling the wells of proper size and depth, casing them correctly to protect and prolong the water supply, and then installing the right kind and size of pumps and setting the motors and control apparatus. Bulletins more fully explaining this service may be secured from Layne & Bowler, Inc., Dept. B, Memphis, Tenn.

Motor Graders for Summer and Winter

765. Adams motor graders in the heavy-duty, medium-size and small units are effective machines for municipal work, tackling a wide variety of street and grading jobs in summer, scarifying and reshaping old oiled or macadam surfaces, grading sites for airports and playgrounds, building new driveways in parks and golf courses and maintaining the surfaces of all unimproved streets and alleys. During the winter they scarify and blade packed ice and snow and prove generally helpful in snow removal. Write to J. D. Adams Co., Indianapolis, Ind., for further information regarding the size of motor grader you need.

Real Economy in Fire Hydrants

766. The failure of fire-fighting equipment often takes its toll before the fallacies of false economy are brought forcibly to the front. There is real economy in the installation of Mueller-Columbian fire hydrants, because they have a self-oiling top, a safety-flange which confines damage by traffic accidents to two inexpensive parts, and the large double bronze bushed drain valves which assure complete drainage when the hydrant is in closed position. For further information and the Mueller-Columbian Catalog, write to Mueller Co., Chattanooga, Tenn.

Certrifugally Cast Iron Pipe

767. The superior strength of U. S. Super-de Lavaud pipe, centrifugally cast by an improved and patented chill-free process, giving the pipe a unique metal structure, combining great strength with ductibility and an extraordinary resistance to impact, are described in literature which may be secured from U. S. Pipe & Foundry Co., Burlington, N. J.

Two-Way Police Radio Systems

768. The new two-way police radio system of RCA eliminates dead spots in your city. Reports from all over the country show that RCA ultra-high-frequency equipment eliminates many of the difficulties of radio coverage. Complete information may be secured from RCA Mfg. Co., Inc., Camden, N. J.

HERE'S AN ASPIRIN FOR BUDGET HEADACHES

EW, MONEY-SAVING I-B TRACTOR AND COMPLETE LINE F AUXILIARY EQUIPMENT WILL WORK YEAR 'ROUND OR YOUR CITY ... MAKE TAX FUNDS GO FURTHER

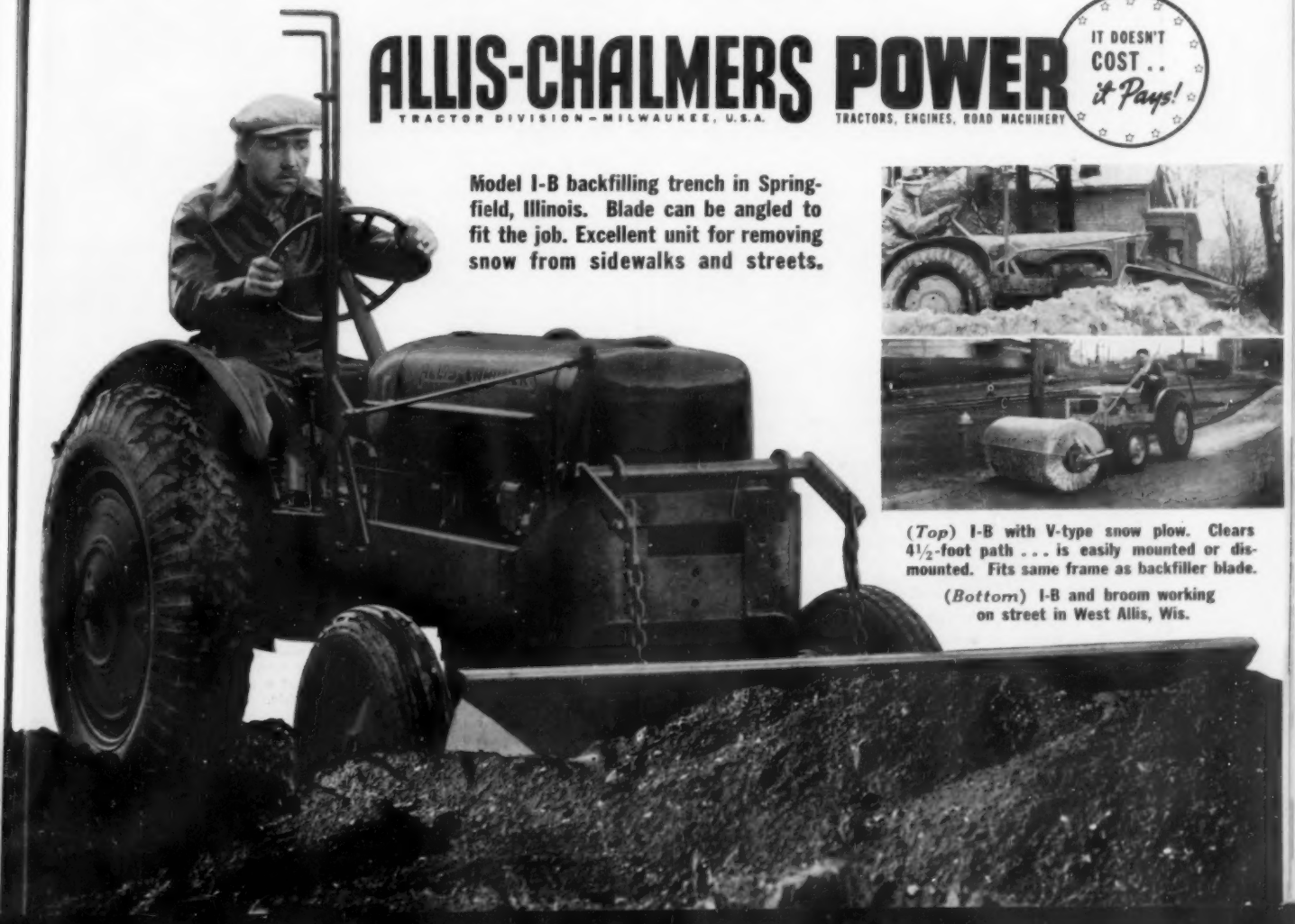
ast moving ... the I-B gets jobs done in a hurry ... moves from one job o the next at 10 m.p.h. Turns in 7-foot radius. Ideal for working in close uarters. Backfiller blade is easily and quickly mounted or dismounted. Other auxiliary equipment, designed especially for the I-B, includes V-type snow plow, air compressor, mower, street broom, trailers and belt ulley. With this equipment the I-B is a year 'round unit. Sturdy 4-cylinder engine ... proved by heavy-duty service in more than 28,000 ractors. ... develops 13½ drawbar h.p. ... burns less than 1 gallon of uel hourly on heaviest work. Works circles around many higher-priced ingle purpose units.

ow in first cost ... within the reach of the smallest city budget. Try the I-B or yourself. Let it help solve your budget troubles. Ask your Allis-Chalmers dealer to show you ... on your city's work ... what it can do ... NOW.

ALLIS-CHALMERS POWER

TRACTOR DIVISION—MILWAUKEE, U.S.A. TRACTORS, ENGINES, ROAD MACHINERY

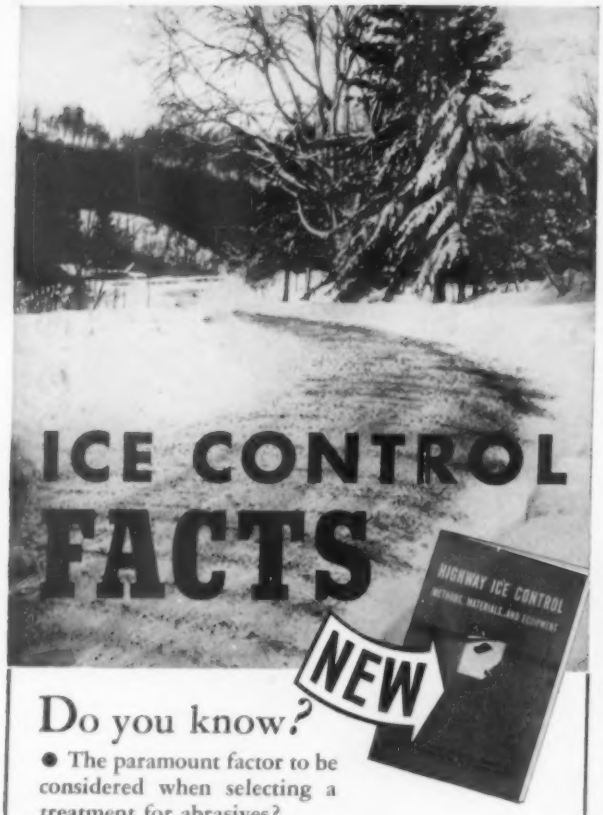
IT DOESN'T COST .. *it Pays!*



Model I-B backfilling trench in Springfield, Illinois. Blade can be angled to fit the job. Excellent unit for removing snow from sidewalks and streets.

(*Top*) **I-B with V-type snow plow. Clears 4½-foot path ... is easily mounted or dismounted. Fits same frame as backfiller blade.**

(*Bottom*) **I-B and broom working on street in West Allis, Wis.**



Do you know?

- The paramount factor to be considered when selecting a treatment for abrasives?
- What Messrs. Moyer and Ustrud reported regarding the increase in skidproofing value of abrasives when treated with calcium chloride?
- The four different methods of applying calcium chloride to abrasives as practiced by leading highway departments?

A new book answering these and many other questions on ice control is now available without charge or obligation to those interested in winter highway maintenance. It contains a resume of ice control methods now in use in various sections of the country . . . *new* facts recently developed by well-known authorities . . . facts, figures and information on ice control that municipal officials interested in this subject cannot afford to be without. Mail the coupon today for your copy of this valuable book.

SOLVAY CALCIUM CHLORIDE
for SPEED and ECONOMY in ICE CONTROL

SOLVAY SALES CORPORATION
40 Rector Street, New York, N. Y.

Kindly send me a copy of your new book "Highway Ice Control."

Name _____

Affiliated with _____

Address _____

City _____ *State* _____ 61-12A

MAKE A REFERENCE FILE OF YOUR CATALOG FILE

(*Continued from page* 20)

Water-Level Control Without Floats

769. The B/W original all-electric control for water levels in tanks and reservoirs has no moving parts in the liquid, and is therefore more effective than old style floats. Bulletin 40 issued by Bender Warrick Corp., 133 Pierce St., Birmingham, Mich., tells the complete story about this system of all-electric control.

Water Costs Less Through Clean Pipes

770. The National method of water-main cleaning is the result of 32 years of experience of one company, with each job handled by a capable individual superintendent, using superior equipment. If you are having trouble with clogged mains or increasing pump pressures to secure the delivery necessary, write to the National Water Main Cleaning Co., 30 Church St., New York, for information regarding The National Method.

Automatic Cone Valves

771. The Chapman Valve Mfg. Co., Indian Orchard, Mass., will be pleased to furnish complete information on automatic cone valves of any size for any specific purpose. It has just recently completed six specially designed valves of this type for the Metropolitan Water District of Southern California for the great Colorado River Aqueduct. Both the valves and the operating mechanisms are specially designed by Chapman to fit your needs.

Elevated Tanks for Water Works

772. R. D. Cole Mfg. Co., Newnan, Ga., has been building water-supply tanks for over 80 years and has effectively served many municipal and privately owned water works. The latest copy of "Tank Talk," No. 8-A, contains a wealth of information about elevated steel tanks which will be well worth while for any municipal water official to have in his files.

A Complete Line of Valves and Hydrants

773. M. & H. Valve & Fittings Co., Anniston, Ala., manufactures a complete line of valves and hydrants, including gate-valves, check-valves, valve-boxes, fire hydrants, mud-valves, shear-gates, extension stems, floor-stands, tapping sleeves and valves, cutting-in tees, and flanged fittings. They will be pleased to quote promptly on your requirements.

Meters Bring Maximum Water Revenue

774. The Empire meter, made by National Meter Co., 4207 First Ave., Brooklyn, N. Y., gives maximum accuracy on large and small flows, with fewer stoppages and stickages, plus a minimum of maintenance cost, thus giving a water department maximum water revenue. Complete information will be found in literature which may be secured free on request from the manufacturer.

Street Parking Meters

775. Dual Parking Meter Co., Commerce Exchange Bldg., Oklahoma City, Okla., will be pleased to furnish cities considering the installation of parking meters with complete information why Dual leads in the number of cities installed, in the number of meters installed and in quality and practical operation. Dual claims to have many practical and valuable features not found in any other meter.

Asphalt Mixing Plants

776. Hetherington & Berner Inc., 701-745 Kentucky Ave., Indianapolis, Ind., will be pleased to furnish complete information about H & B asphalt mixing plants, both portable and stationary, in all sizes for hot and cold mixes and including the newest developments in asphalt plant engineering.

Oil-Burning Asphalt and Tar Kettles

777. A very complete line of asphalt and tar kettles, which are fireproof and have oil-burning torches for heating, and are equipped with hand and motor-driven sprays, are described in the catalog of White Mfg. Co., Elkhart, Ind. This company also makes asphalt patching plants, complete portable units for city street departments.

Decorative, Practical Lighting Standards

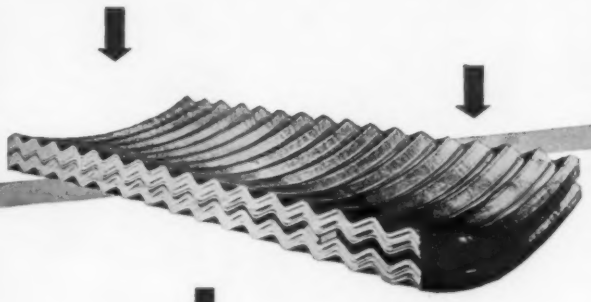
778. Union metal steel standards, which may be used both for street lighting and to carry the overhead wires of trackless trolleys, are made in many designs and efficiently serve cities in making their streets attractive. Complete information and a catalog may be secured from The Union Metal Mfg. Co., Canton, Ohio.

Water-Filter Control Equipment

779. Many modern water-filtration plants are being made more efficient by the installation of Simplex Venturi-Type meters, effluent rate controllers and filter gages. This equipment insures dependable performance because of the dependability of Simplex equipment. Complete information regarding the Simplex water-control line may be secured from Simplex Valve & Meter Co., 6789 Upland St., Philadelphia, Pa.

Easily Erected at Low Cost

AND THEY LAST A LIFETIME



Why spend weeks or months building large drainage structures when you can build them faster and at less cost with Armco Multi Plate?

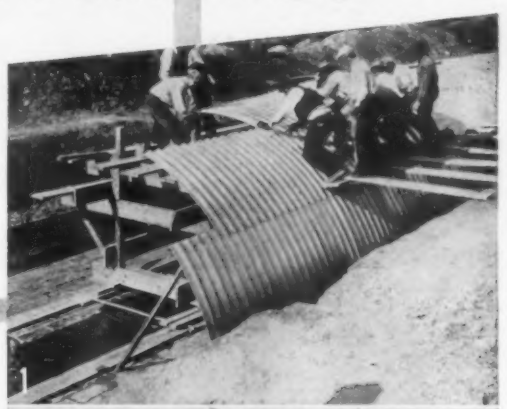
Remember, Multi Plate plates come to your job ready for quick, easy assembly. Your own local crews just bolt them together and backfill with earth. No special equipment or skilled labor is needed. This is why the average Multi Plate structure can be erected at low cost *in a few days* — often without interrupting traffic.

Once in place, Multi Plate should serve a lifetime without maintenance because the heavy-duty plates are formed with extra large corrugations to withstand heavy loads and sudden impact. Then too the base metal is galvanized ARMCO Ingot Iron—an iron that already boasts a 33-year service record in gages much thinner than those used for Multi Plate. See your Armco representative for prices and information. Armco Culvert Mfrs. Assn., Middletown, Ohio.

MULTI ARMCO PLATE

ARMCO MULTI PLATE

A PRODUCT ORIGINATED BY ARMCO ENGINEERS



1. In constructing this large outfall sewer the engineer saved time and money by using an Armco Multi Plate arch anchored to a concrete base by means of unbalanced channels.

2. More than $6,000 was saved by using Armco Multi Plate Pipe for this 165-inch diameter siphon. Added safety is assured because Multi Plate readily adjusts itself to unstable soils.

3. Since it's the metal that carries the load, headwalls for Multi Plate structures can be simple and inexpensive — another way to cut costs and speed work when funds are limited.

Setting new Standards of PERFORMANCE

under all drainage needs!

It takes more than conversation about laboratory tests to prove performance. The place to test a corrugated pipe is in the ground under a well traveled highway! And not for a month, or year or a decade . . . but over a period of a quarter century or more of day in and day out exposure to the destructive elements and the hammering of heavy traffic. GOHI Corrugated Pipe for more than 30 years has been setting new standards of performance *in the ground* and eloquently telling its story of endurance in actual service.

New England Bolt Co. . . . . Everett, Mass.
Central Culvert Co. . . . . Ottumwa, Iowa
Capital City Culvert Co. . . . . Madison, Wis.
Bancroft & Martin Rolling Mills Co. . S. Portland, Me.
Denver Steel and Iron Works Co. . Denver, Colo.
The Lane Pipe Corporation . Bath, N. Y.
Dixie Culvert Mfg. Co. . . . Little Rock, Ark.
St. Paul Corrugating Co. . . . St. Paul, Minn.
The Newport Culvert Co. . . . . Newport, Ky.

GOHI Pipe meets Copper-Bearing Pure Iron requirements of all specifications published by nationally recognized specifying authorities.

72-page illustrated book on use of GOHI Pipe in modern drainage is yours for the asking. Address nearest fabricator.

GOHI CULVERT MANUFACTURERS, INC.,
NEWPORT, KY.

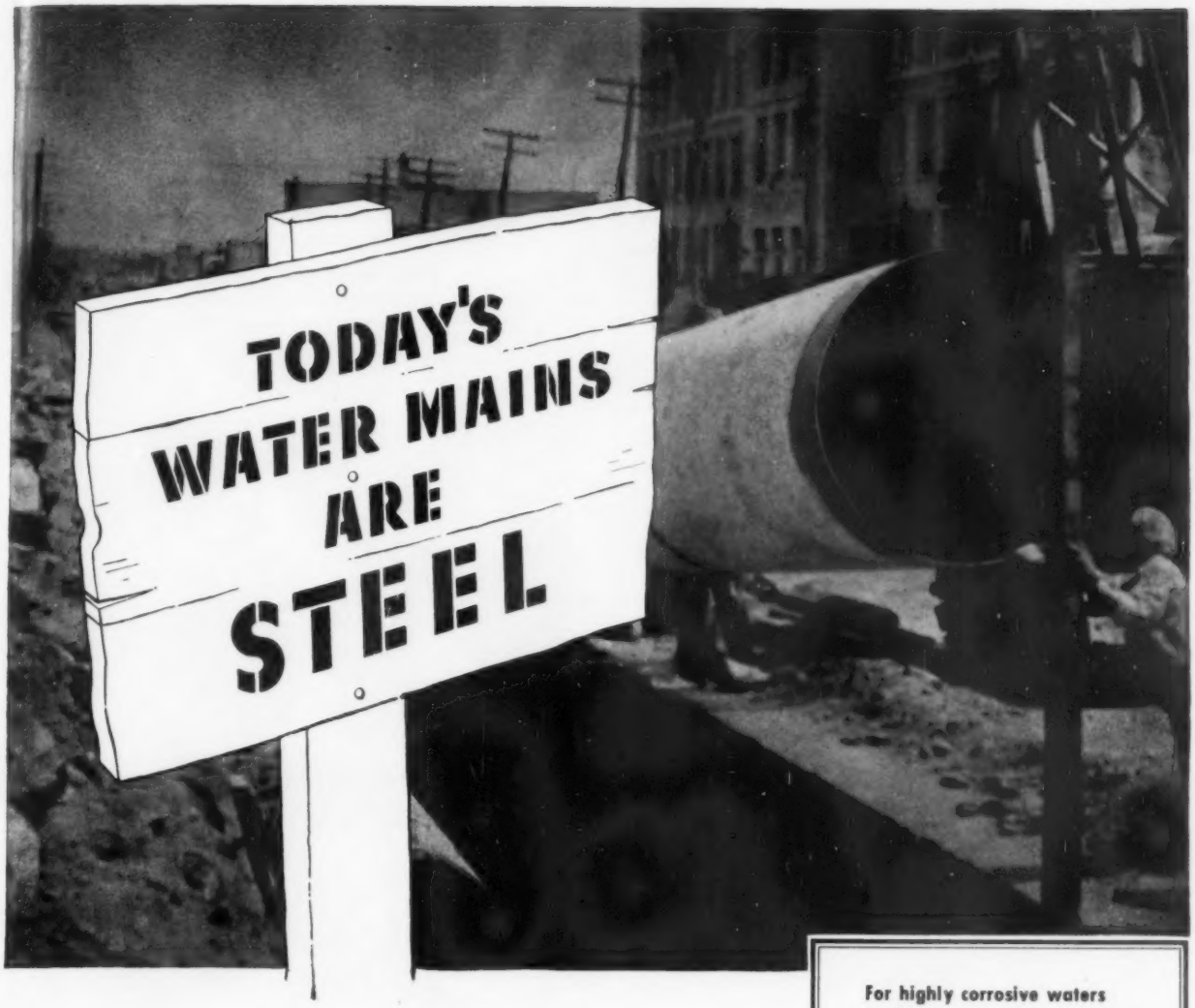
Check In
AT DeWITT OPERATED HOTELS

In Cleveland
HOTEL HOLLENDEN
In Columbus
THE NEIL HOUSE
In Akron
THE MAYFLOWER
In Jamestown, N. Y.
THE JAMESTOWN
and THE SAMUELS

DeWITT OPERATED HOTELS

Theodore De Witt, President
R. F. Marsh, Vice-President

The Hotels that Check with Every Travel Standard



WITH many cities now putting their water systems on higher pressures, the need for the security of steel pipe is becoming even more acute. Only steel can offer you the extra strength you need for these water pressures. It gives you the most service per dollar of cost—the greatest safety that money can buy.

Steel Water Mains cost less to lay because steel pipe is lighter and easier to handle and is available in longer lengths—lengths as great as 40 feet, that reduce the number of joints per mile.

Steel Water Mains cost less to maintain because steel is not only strong, but also flexible. It prevents sudden ruptures, and the resultant repair and damage costs. Traffic vibrations, earth settlement, and even sudden shocks can never cause disastrous, abrupt failures.

Steel Water Mains have smooth surfaces that are ideal for the application of various dips and coatings, which may be needed where soil conditions are highly corrosive.

Write for complete information on NATIONAL Steel Pipe for Water Mains. The NATIONAL organization is equipped to serve you speedily, efficiently, and in exact accordance with your requirements.

For highly corrosive waters

In addition to regular steel pipe, NATIONAL produces a special cement-lined pipe, "DUROLINE," specially designed to give long service under extremely corrosive water conditions. In DUROLINE, the interior surface of the pipe is completely sealed against corrosion—giving you the perfect combination of the strength of steel, and corrosion prevention at nominal cost.

For high water pressures

For handling abnormally high water pressures, we recommend NATIONAL Seamless Pipe, a pipe that is made without welds, by piercing solid billets of highest quality steel. This pipe removes all possibility of localized weakness, and assures full wall strength throughout. NATIONAL Seamless is available in sizes up to 24-inch O.D. Write for complete data.

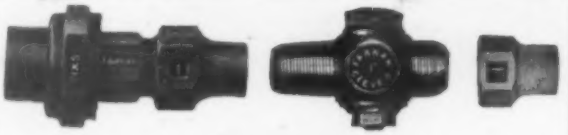
NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

During December we hope you will remember to mention THE AMERICAN CITY.



FARNAN BRASS

THE ANSWER TO ANY QUESTION REGARDING BRASS GOODS FOR LEAD, IRON OR COPPER SERVICE PIPE

THE FARNAN BRASS WORKS COMPANY

Established in 1852

CLEVELAND, OHIO

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured ***No Large Bell-holes to Dig***

Saves at Least 75%

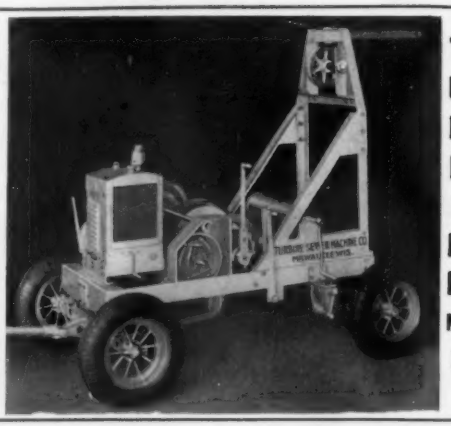
Leadite is shipped in powder form, packed in sacks of 100 lbs. net each
Leadite tested and used for over 35 years • Leadite joints improve with age

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY

Girard Trust Co. Bldg., Philadelphia, Pa.

No Caulking



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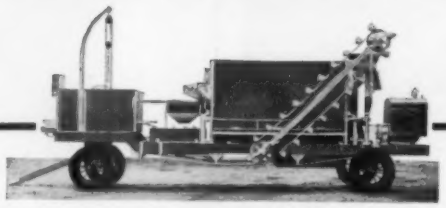

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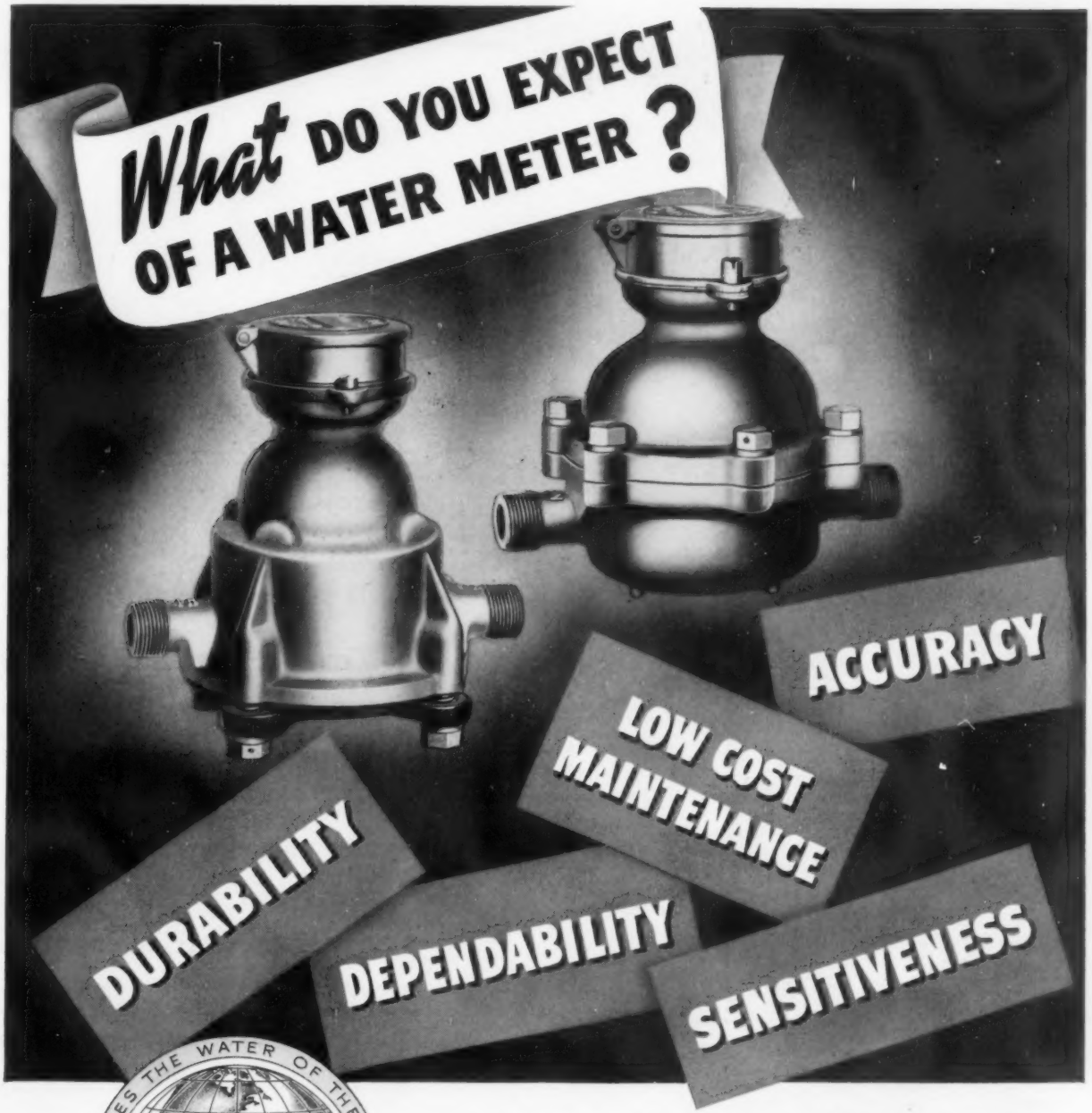

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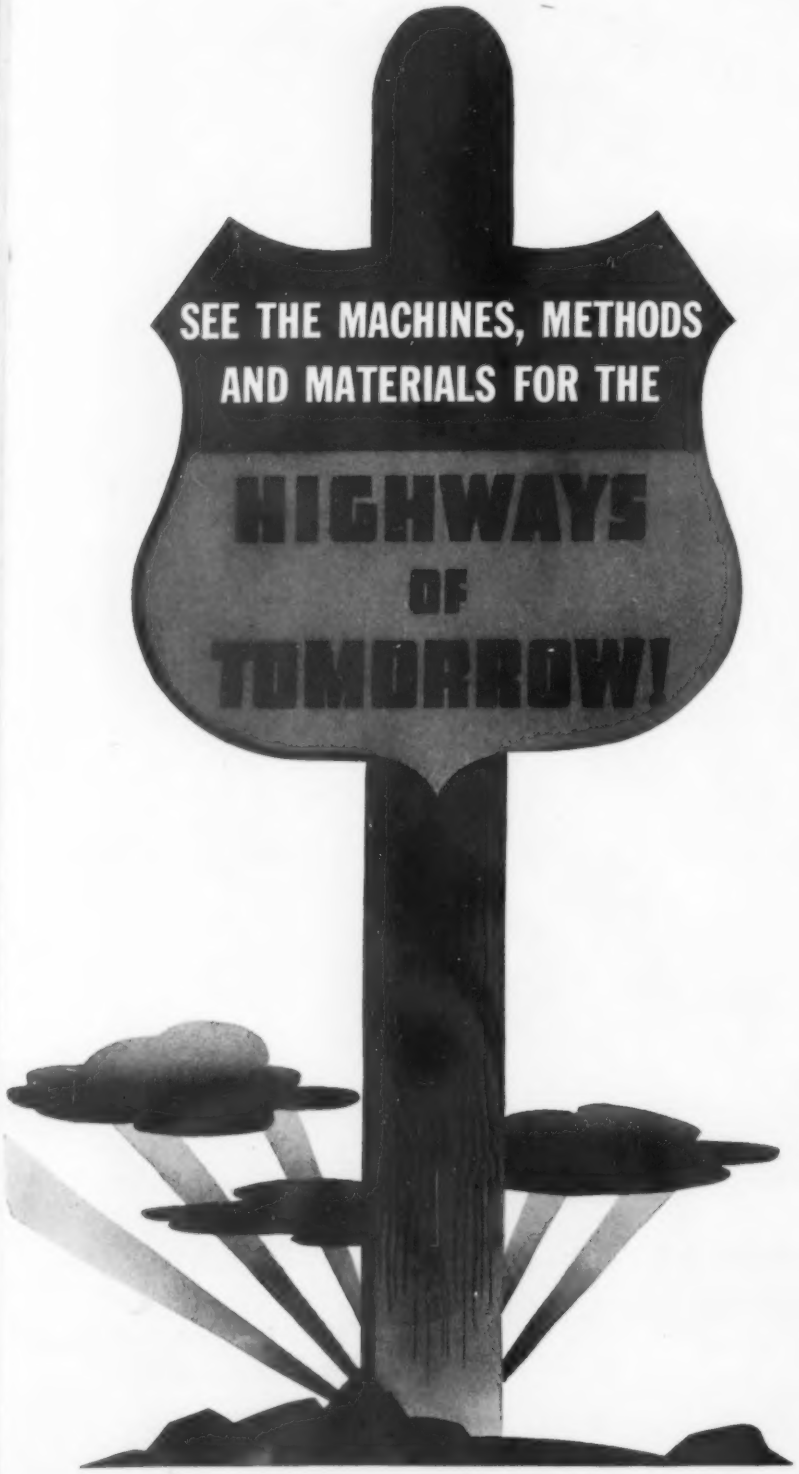

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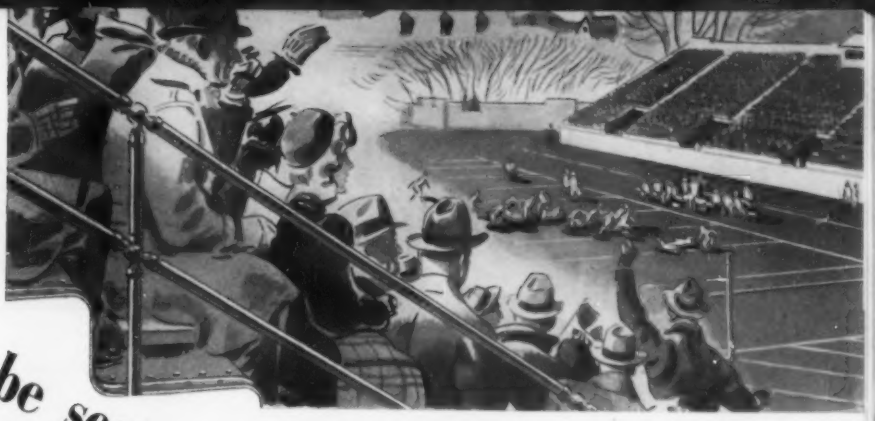

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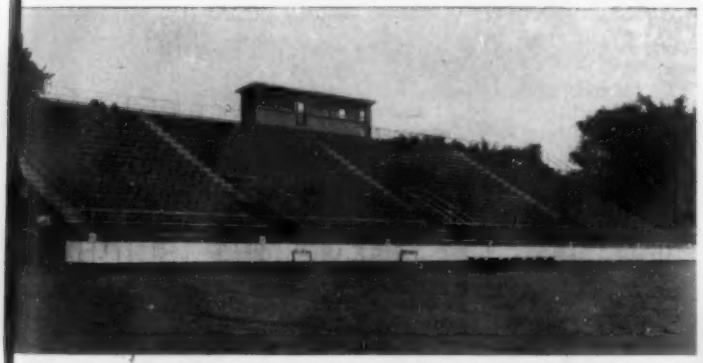

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Mr. Edgar J. Butterheim,
President,
The American City Magazine,
470 Fourth Avenue,
New York City.

Dear Mr. Butterheim:-

We use the Municipal Index to obtain the names of manufacturers of water works equipment and carefully preserve each copy.

We have valued this fine publication since its initial number and do appreciate it.

The data contained in the book is very helpful and I am certain that all water works men prize this splendid volume very highly.

Cordially yours,
Scotland G. Highland
General Manager.

THE MUNICIPAL INDEX
470 Fourth Ave., New York

Any manufacturer who does not use adequate space in the Municipal Index to illustrate and describe his products for municipal and water works uses is overlooking one of the most efficient means of gaining effective sales producing publicity.

Facts vs. Fancy re:

LEAKAGE

The generally accepted average of unaccounted-for water is 15% of normal consumption. Everybody knows that *some* part of unaccounted-for water is due to leakage from mains. Experienced water works men know that leakage is only a small part and that *most* of the unaccounted-for water is attributable to a variety of other causes, many of which are necessary and unavoidable.

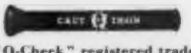
* * * *

To ascertain how much of the 15% average of unaccounted-for water is actually due to leakage from water mains, we have recently conducted a leakage test survey of cast iron mains in 25 cities in 6 states. The mains tested range from several hundred feet to more than twenty miles in length, in sizes from 4″ to 30″ and up to 44 years old, either with no service connections or relatively few that were turned off during the tests. The average leakage per mile of pipe, per inch of diameter, per 24 hours was 41 gallons—or an average of 380 gallons per mile of pipe per day for the sizes tested. This leakage is less than 2% of the average of normal consumption per mile of distribution main per day. This survey, covering a broad average of water main construction and substituting facts for guesswork, shows that

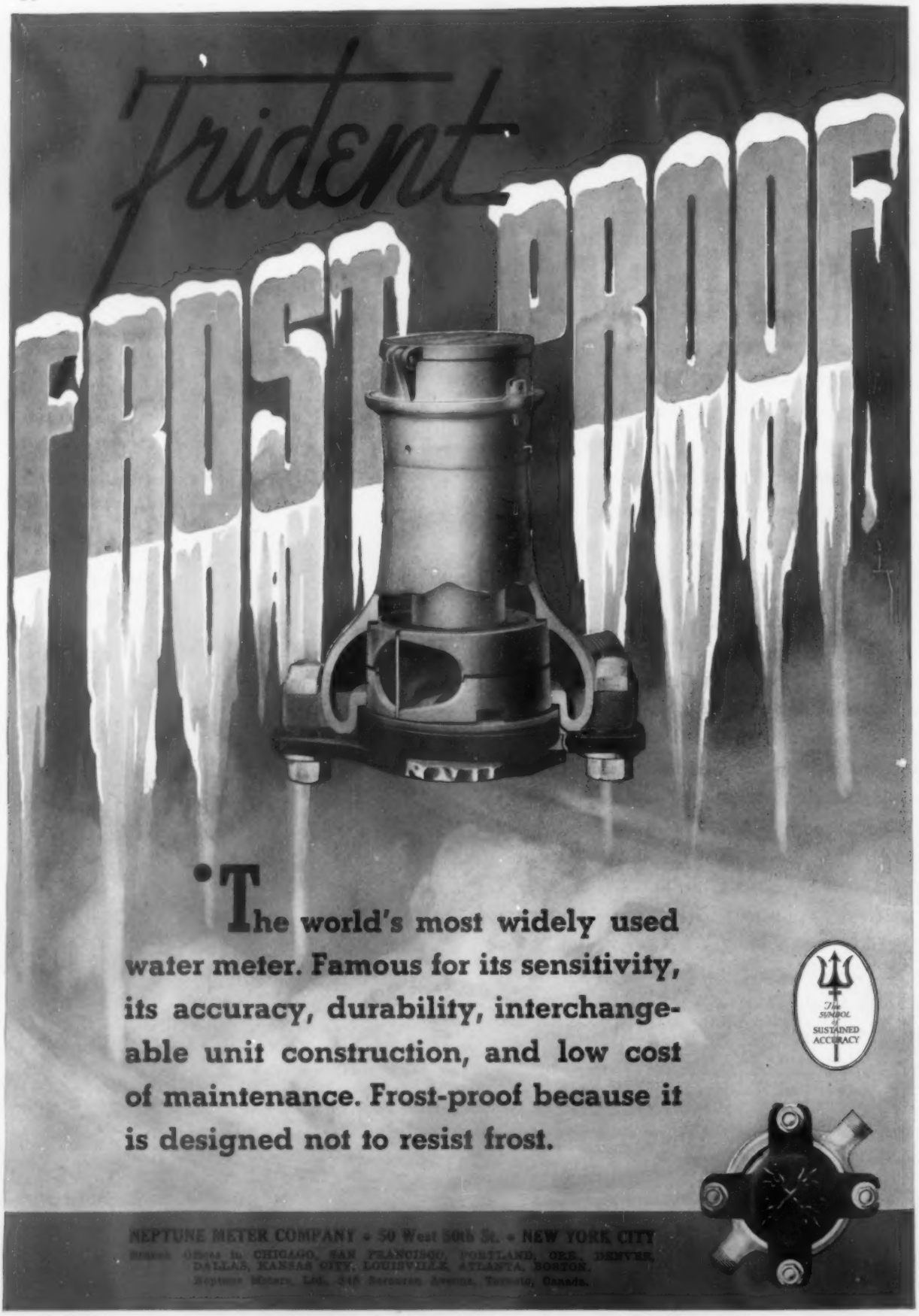
about nine-tenths of all unaccounted-for water* must be attributed to causes *other than leakage from cast iron water mains.

This part of average normal consumption represents unaccounted-for water—15%.
This part of unaccounted-for water represents leakage from cast iron water mains—less than 2% of average normal consumption.
15%
13%
2%
NORMAL CONSUMPTION OF WATER

For further information write to THE CAST IRON PIPE RESEARCH ASSOCIATION, Thomas F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois.



Look for the "Q-Check" registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.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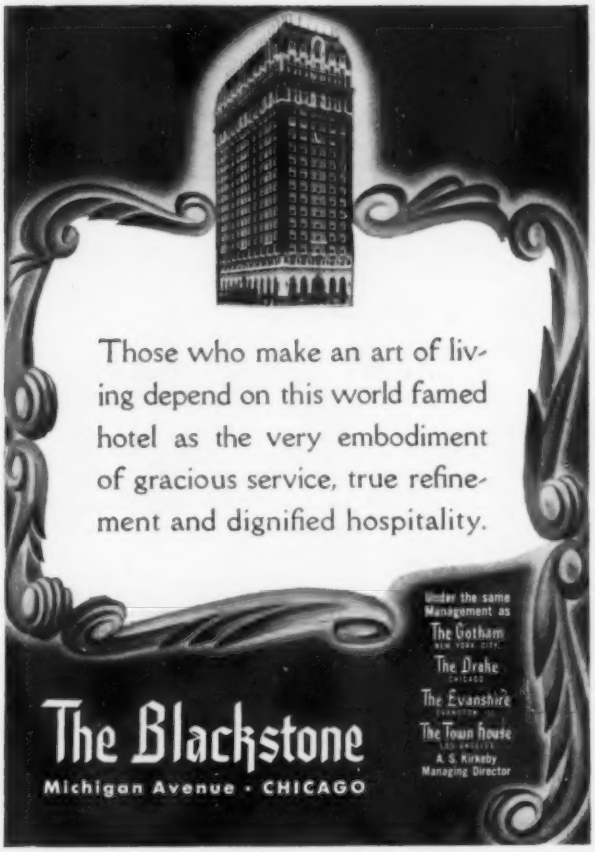
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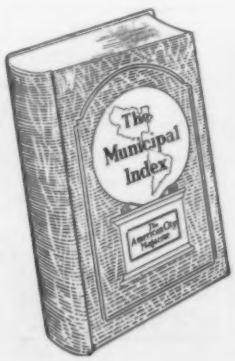

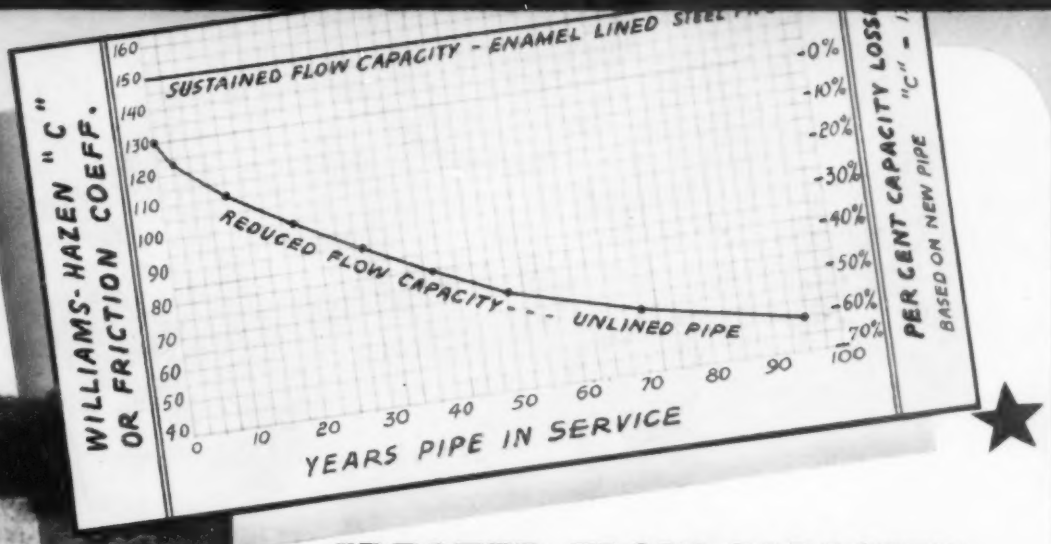

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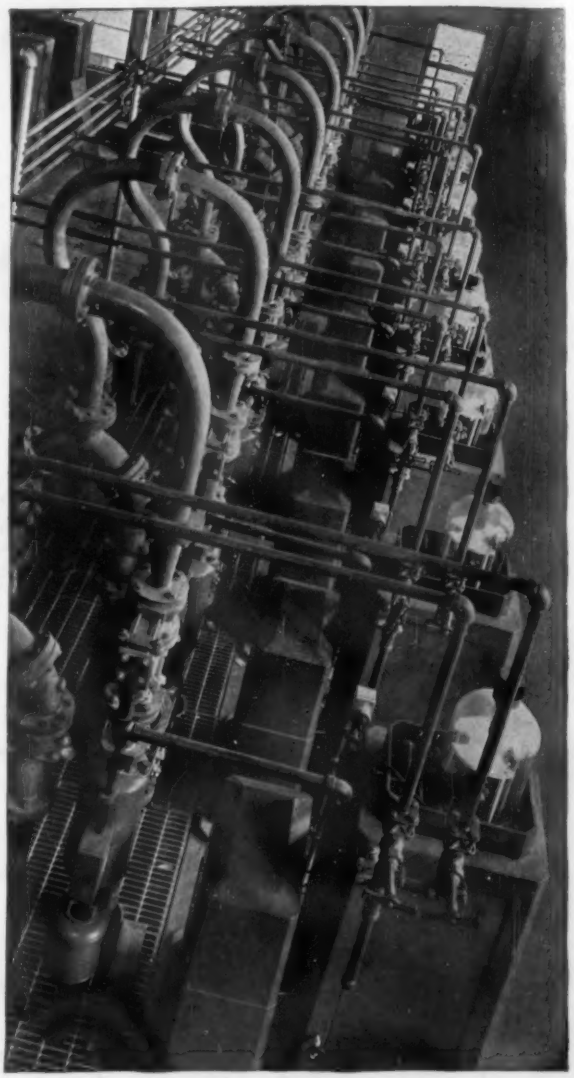

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Volume LV

The American City

Year 1940

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